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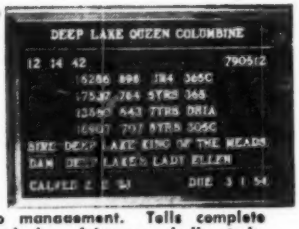
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The **Farmer's Digest**

Volume 20 Special Livestock Issue, April 1957 Number 10

Ten Pigs Farrowed, Nine Pigs Weaned

Here's a round-up of the proved practices used by Minnesota's 24 Swine Honor Roll producers . . .

Condensed from The Farmer

Robert G. Rupp

WANT to save more pigs? "Be ready for sows and be there when they farrow. You may lose some sleep, but you can save more pigs."

Want faster gaining pigs? "Start them eating early, use good quality feed and keep pushing them. Keep them healthy and dry."

Those were the points stressed most by 24 Minnesota swinemen picked for their records of hog production in 1956.

The 24 were named to a 1956 Swine Honor Roll on the basis of pounds of pork produced per sow from spring farrowed litters, and on their outstanding records in care, feeding and general swine management.

They piled up an impressive record: 10.6 pigs farrowed and 9.5 weaned per litter—2.5 more than the Minnesota average. They produced daily gains of 1.2 pounds per pig per day—nearly half-a-pound a day better than average. Market weights averaged 214 pounds in 178 days—a shade under six months from farrowing to slaughter for 3,989 hogs.

Individuals did even better. Harold Ryan, young Redwood County farmer, farrowed 136 pigs from ten sows, weaned 119 of them and raised 118—almost double the state average. He put 218 pound hogs on the market in 162 days—an astounding gain of 1.35 pounds per pig per day.

John Reinbold, in northern Red Lake County put 201 pound

Reprinted by permission from The Farmer, St. Paul, Minnesota

hogs on the market in 154 days—just over five months. Vere Thurston in Blue Earth County boosted the weight of his pigs from 44 pounds to 101 pounds at a low feed cost of only $10 per hundred pounds of gain. Cost for the second hundred pounds gain was even less.

Four of the 24 swinemen farrowed 12 pigs or more per sow. Another seven farrowed 11 or more. Six of the 24 raised ten or more pigs per sow.

How did they do it?

All 24 were asked that question at an Honor Roll dinner.

How They Did It

Here are their answers:

"Pick your sows on their inherited ability to produce big litters. Have them in good condition at breeding. Keep them clean, dry and comfortable."—Styrk Isberg, Jr., Fillmore County.

"Ear-mark heaviest gilts from biggest litters when they are a few days old. Use guard rails all around the pen; put heat lamps in a protected corner."—J. M. Frost, Jackson County.

"Use an active boar from a large litter."—Sanford Smith, Mower County.

"Use heat lamps when the temperature is 55 degrees or below."—Elliot Moody, Watonwan County.

"Pick only gilts that have from 12 to 16 well-spaced 'dinner plates' and plenty of length."—Francis Reding, Mower County.

"Make sure sows exercise. Cross breeding will increase litters and produce stronger pigs." — Vere Thurston, Blue Earth County.

"If sows are uneasy, take pigs away and place them in a basket under a heat lamp until farrowing is completed."—Alfred Hovden, Watonwan County.

"Flush sows and boar before breeding. Turn pigs out as soon as possible. Keep pens clean and dry."—John and Merrill Bunn, Steele County.

"Don't overwork the boar. Feed plenty of good protein feed."—Glen Voyles, Martin County.

"Feed iron to young pigs and use heat lamps."—John Reinbold, Red Lake County.

"Give little pigs a shot of terramycin from an oil can."—Robert Highum, Fillmore County.

"Keep close watch at farrowing. Feed clean sod to little pigs to prevent anemia."—Paul Plitzuweit, Houston County.

"Use farrowing stalls and watch sanitation." — Lawrence Schafer, Steele County.

"Flush sows and feed gilts a bulky ration with lots of alfalfa in it."—Robert Halverson, Nicolett County.

"Wean at five to six weeks." —W. C. Dickinson, Olmsted County.

"Use antibiotics, worm pigs

and treat hog for mange."—Wm. G. Kriesel, Steele County.

"Be on hand when sows farrow. Give pigs their iron solution with an oil can to prevent anemia."—William Lonergan, Mower County.

"Breed gilts when they are eight to nine months old. Use a good husky boar from a large litter."—Mervin Malchow, Jackson County.

Those were some of the individual practices recommended by Honor Roll swinemen.

Twenty-two of the 24 swinemen use heat lamps to dry off and warm up pigs immediately after they are farrowed, and to keep them in a warm place out of danger of being crushed by the sow while they are young. Most build brooders into a corner of the pen with a heat lamp suspended inside.

Twenty-three of the 24 feed antibiotics. All creep feed pigs, some of them starting with a precreep as soon as the pigs will begin eating.

Eleven of the 24 use guard rails in pens to lessen danger of sows crushing pigs against a pen wall. John Reinbold doesn't use guard rails, but he has all pen walls and gates raised four inches above the farrowing floor. "That makes pens easier to clean and prevents a sow pinning a pig against a wall. I have seen sows actually squeeze pigs right out under a wall without hurting them," says Mr. Reinbold.

Twenty of the farmers treat their hogs for mange and 21 worm pigs. Six use farrowing stalls. Those who use farrowing stalls feel they are a definite help in saving pigs—and occasionally saving sleep for the farmer who has them. "We figure farrowing stalls will save an average of one pig per litter," H. G. Zavoral told the group at the meeting.

Sixteen of the farmers control anemia with sod. "I give day-old pigs a squirt of terramycin (powdered form, mixed with water) from an oil can," says Mr. Isberg. "They also always have clean sod, taken from along the railroad tracks before them too. If a little scours shows up, that sod does more to control it than anything else.

Fifteen control anemia with iron, either fed orally, poured over sod, or painted on the sow's udder. (Some use both sod and iron which accounts for the total in the two groups up to 31.)

None of the 24 like early weaning. Two wean at five weeks, but most prefer longer—six at six weeks; six at seven weeks and 11 at eight weeks. "I've tried all different periods but find weaning at five to six weeks is the best," says William Dickinson. (Some wean at two different

ages, hence the 26 answers above).

To get his 13.6 pigs per litter farrowed, Harold Ryan used a ¼-Montana x ¾-Tamworth breeding combination (Tamworth boar on Tamworth-Montana No. 1 sows). It was the second litter from those sows, which were originally selected for their length, ability to carry big litters, and themselves from big litters.

After weaning their first litters, the sows were put on alfalfa-brome-clover pasture by Mr. Ryan. They were moved into dry-lot a few days before breeding and hand-fed a corn and supplement mixture so they would be gaining slightly. They were yard bred in November. Mr. Ryan used a "good meaty boar with lots of length." During the winter the sows got a bulky ration, made up of ground alfalfa (20% to 25% of the ration, by weight), shelled corn, ground oats and a 35% to 40% protein supplement (one pound of supplement to 10 pounds of other ingredients).

Sows were sprayed with chlordane for mange control two weeks before they farrowed. They ran in a cattle feedlot all winter, so got plenty of exercise.

Sows farrowed in farrowing stalls. They were moved into the stalls shortly before and stayed there until five or six days after farrowing. Each sow was fed in her stall, but was let out once a day to exercise. Sows were self-fed all during farrowing, with feed before them even the day they farrowed.

"Farrowing stalls save me an extra pig or two per litter," says Mr. Ryan, although he also makes it a point to be present when pigs are farrowed. "There is no substitute for vigilance in saving pigs. You've got to be ready when sows farrow, and be there." He dries off new-born pigs, puts them in a basket under a heat lamp and makes sure they are strong before letting them out to nurse.

About one in five hogs that get to market are meat type. But the demand by the buyer for lean pork is gaining. Looks as though consumers are building a demand faster than farmers are building a supply.

Alfalfa in the ration is reduced to about 15% from farrowing until pigs are weaned. Then sows, after their second litter, are marketed.

Pigs are given a pre-creep feed at two to three weeks. They are castrated at four to six weeks and vaccinated. At five to six weeks they are switched to a creep feed made up of milk protein (dried whey or dried buttermilk), commercial antibiotics, coarse ground hull-less oats, tankage, meat scraps, soybean oil meal

and choice alfalfa hay. Pigs are weaned at eight weeks.

They are put on second-year alfalfa-ladino pasture as early as possible. The ration above is self-fed on pasture until pigs are three months old. At that time Mr. Ryan quits hulling the oats and slowly removes the milk protein, switching pigs to a straight supplement. Pigs are wormed at three months.

As pigs grow, oats are reduced and corn added. Corn, plus supplement, is fed until market.

The alfalfa-ladino pasture is clipped once or twice during the season. "If alfalfa starts to blossom and stems start getting hard, I clip," says this young hogman.

Hogs, picked for length and kept lean by a high alfalfa, pasture ration demand meat-type prices. Mr. Ryan averaged a 40 to 50 cents per hundred premium on 85% of his hogs last year.

Vere Thurston, Blue Earth County honor roll member with a record of 12 pigs farrowed and 10.9 raised, considers breeding, feeding and vigilence important to making money with hogs, just as does Mr. Ryan.

In selecting breeding stock, he points out, "get a good sire and good sows—those that produce the kind of pigs that bring premiums."

"I look for a boar with a good length of body, good legs, good hams and out of a big litter. Good legs have a lot to do with what a boar will amount to when he is big. Also, I want a big, growthy boar."

For sows, he marks them in the litter, saving gilts from sows that milk good, bring their pigs along fast, and have at least 10-pig litters.

Styrk Isberg, Fillmore County, who raised 10.7 pigs per litter, waits until pigs are three or four week old before marking gilts. "It is easier to mark just those few than mark all in all litters." By waiting, he has ample opportunity to see which sows have best temperament, are best milkers, and which pigs are making fastest gains. When he does mark, though, he marks three gilts for every two he wants to keep. That gives him opportunity to again select the best gilts for the breeding herd.

Mr. Isberg has another labor saver he is proud of. That is a strip concrete sidewalk extending from his farrowing house to a growing house and beyond. Three pastures are connected by the walk, which is made of six-inch concrete, four feet wide and fenced on both sides. Pastures are rotated, with pigs in a fresh one each year. But they always use the same walk getting there and back.

"That walk has paid for itself many times in elimination of mud holes alone," says Mr. Isberg.

Calving Signs You Can Use

You can still make a mistake, but filling of the udder, change about the tail head, refusing to eat, and temperature rise are signs you can use . . .

Condensed from Hoard's Dairyman

Melvin Scholl

THERE are many things you can watch for that make calving time fairly predictable.

The gestation period varies considerably from the average of 282 or 283 days usually accepted. Such factors as breed, age of cow, heritability, and sometimes the sex of the calf influence the length of time a cow carries her calf. Even stress of production can prolong time of gestation.

For this reason, breeding dates are important. Often, however, post-conception heat, usually referred to as "false-heat", occurs and if the cow is bred at this time the dairyman finds himself in a state of confusion.

When a cow has gone along for a time and we are fairly certain she is with calf and then comes in heat, it is wise to have a veterinarian examine her for pregnancy before breeding her. If this is not possible, then it is best not to breed her. Wait to see if she bleeds at the vulva two days after her suspected heat. If she does bleed then you can be certain she is not with calf. Go ahead then and breed her when she comes in heat next time. If she doesn't bleed, she is probably in calf, and the heat is a false one. However, keep an eye on her for at least one more heat period.

It is necessary to have this long-range forecast for several good reasons. We want to know when the cow will freshen next time in order to properly dry her off and give her the necessary rest period.

Be on Hand . . .

It is a very good idea to plan on being with a cow, especially a valuable one, and always with a first-calf heifer, when she calves. With experience, coupled with very close observation, it is possible to know within a few hours when a cow will calve. There are, however, exceptions to all rules, and occasionally an animal will freshen suddenly with none of the usual indications.

One of the first symptoms is

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the filling of the udder. Most dairymen notice this. But this is one of the least unpredictable signs. Older cows often fail to make much of an udder until calving time or after. Heifers, on the other hand, bag up for weeks in advance, sometimes swelling under the belly, and occasionally even at the vulva.

Milk present in the udder is likewise an unreliable clue. Many times an animal comes to her milk a week or more before she is ready to calve. When a cow's udder fills suddenly, however, and the teats become distended and glossy, with milk spurting from them, you may know that calving time is near.

A good and usually reliable sign of parturition is the softening of the cartilage along the tail head. Every dairyman should become a keen observer of this phenomenon and recognize it as a very good omen of calving. It is not unusual, however, for the tail head to begin to fall away several days prior to calving

Disposition Will Change . . .

To one who really knows his cows individually, it is easy to recognize by the cow's change in disposition that she is about to calve. Her very nature alters. She fusses and fidgets, and if she is outside, usually prefers to go off wandering by herself. Her most marked characteristic is her sudden transformation into a stubborn, hell-bent-for-election bovine vixen.

As a rule most cows will refuse their grain at the feeding preceding calving. When this happens, you can be reasonably sure that unless she is off-feed, she is about to calve.

Temperature Change . . .

There is one infallible sign of calving. The normal cow's temperature is always so nearly 102 degrees that we can safely use that figure as normal. Just before calving, however, sometimes one, two, or three days before, the usual procedure is for the animal's temperature to rise about a degree. If this happens, you know she is following the general pattern. Then, when the cow's temperature starts to drop, calving time approaches. When it has dropped one degree below normal, down to say 101 degrees, you will know that she will calve within 12 hours, if calf is coming normally.

I have never known this to fail, providing the animal's temperature follows the pattern described above. This course is supposed never to fluctuate. I have observed cases, though where the animal has shown no temperature change whatsoever before or during calving.

When all the above symptoms

have been considered and have resolved themselves, we should be ready for the calving act itself. This event is the crucial period of a cow's lactation. For how she comes through it will determine, to a large degree, her entire approaching lactation, as well as her future breeding history. And the part that you, as dairymen, play in this scene is most important.

Good Records Save Tax Dollars

You can usually avoid paying too much income tax if you follow a few simple rules during the year, says A. W. Willis, Wyoming extension economist.

Keep good records. These records must include all receipts and all expenses incident to the operation of the farm and ranch. You also must know just what expenses are deductible and which ones are not deductible.

To take good care of your particular tax situation, *keep regular and accurate records.* Willis suggests these rules to follow in keeping these records:

1. Keep a record of all small-expense items, especially those paid for in cash.

2. Some small items amount to a lot of money in a year's time. Don't overlook them. These small deductibles that are some times forgotten include: Bank service fees, interest payments, membership dues in farm organizations, subscriptions to farm magazines, overnight business trips, losses on household goods used by hired help, and depreciation on that part of the home used by hired help. Cash paid for groceries consumed by hired help is also deductible.

3. Keep all receipts and cancelled checks for at least five years. Pay all bills by check if possible—the charge for extra checks is a small price to pay for the protection and information a cancelled check affords.

4. Your equipment, improvements and installations, and machinery all lose some of their value each year. Keep these depreciation records, including also all purchased breeding, dairy and work livestock. Keep inventory records of this class of livestock separate from the livestock produced or fed for market.

You may save many dollars of unnecessary income tax by going to see a good farm-income-tax consultant. But any consultant can only be of maximum service if you know something about the law and have complete and accurate records. —*University of Wyoming*

Get Bigger Returns from Beef Herds

Progeny and performance testing, plus range improvement points the way to profits . . .

Condensed from The Furrow

Lee Stevens

OKLAHOMA cattlemen have found that a progeny-testing program is helping them select cows with mothering ability and herd sires that will transmit desirable characteristics to their offspring. This, along with rangeland improvement, is their new frontier for producing more pounds of beef on fewer acres and in a shorter time.

These cattlemen are weighing their cattle in a beef cattle performance testing program and are coming up with some enlightening discoveries. They have found that actual scale weight of calves at weaning time is a more reliable yardstick to use in selecting heifer herd replacements than former visual-evaluation methods. Their results also show that mothering ability of the brood cow has an effect on the weaning weight of the calf.

Here's a typical example: J. D. Karr of the McSpadden Hereford ranch in Rogers county found an average spread of 281 pounds between the weight of creep-fed calves at weaning age of 205 days. The top calf weighed 600 pounds and the lightest calf weighed 319 pounds. Replacement heifers from cows whose calves land in the upper third of the herd, weaning-weight-wise, will increase average weaning weight for the herd over a period of years.

Quality Important at Weaning

Not only are cattlemen in the Sooner State finding that weights differ, but they have discovered there is a big difference in quality of the young calves at weaning time as well. Now, when calves are weaned they are weighed and also graded. In this way, cattlemen can select herd replacements on the basis of both weaning weights and quality. Likewise, a program of progeny-testing of bulls in the herd gives a strong indication of the individuals that will most likely transmit both weight and quality. This will further increase weaning weight, quality, and the ability of the

Reprinted by permission from The Furrow, Moline, Illinois

calves to do well in feedlots.

The cattlemen see no conflict between this faster-growing calf and the public's demand for beef with less fat and more lean meat. It is a matter of selling a heavier calf younger and very few of them find fault with such a program.

Pasture Improvement Pays

According to USDA heavy breed turkey poults in December totaled nearly 2.2 million compared with just over a million in December a year ago. This is an increase of 112 per cent.

Along with improvement in the beef cattle herd comes range improvement. Oklahomans have found that by clearing rangeland of brush and weeds they can increase the carrying capacity. It's not uncommon to double the yield of grass in 2 years after killing brush and weeds. Modern machinery and up-to-date methods have cut costs and increased efficiency of range improvement work.

Cattlemen everywhere are looking to the laboratories, to herd improvement, and to the improvement of rangelands as their frontiers for producing more beef —to date, the results look promising.

Similar Results in Texas

Animal husbandmen of Texas A. & M. College report a definite relationship between high weaning weight and high grade among the 929 beef calves processed in a recent study at that station. All calves grading "fancy" had an average weaning weight of 442 pounds as compared with 413 pounds for all calves grading "good."

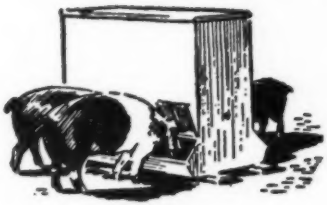
They also found that heifer calves tended to grade higher than bull calves of the same age. Another finding was that cows 4 to 9 years of age at the time their calves were dropped, weaned heavier calves than cows 2 to 3 years of age and over 10 years of age.

Calves from a herd participating in this cattle improvement program for the first time in 1955 weighed 7 per cent less than those from cows of the same age in a herd which had been under an improvement program since 1953.

The greatest need of most dairy farmers, if they are to operate efficiently, is production records on each cow in their herds.

The animal husbandmen say that results from this early test are a strong indication that rapid progress can be made in both increasing weaning weight and improving conformation when a careful testing program is put into practice.

The Certification Program for Meat Hogs



It's an important step forward . . . toward developing the kind of hogs consumers want to buy . . .

Condensed from
Hampshire Swine Registry Bulletin

MORE and more, potential buyers of breeding hogs are demanding factual proof that what they buy comes from a superior producing meat or well muscled strain. The purebred breeder must endeavor to meet that demand. And it cannot be done by short cut or incomplete methods.

Leading swine registries and the packers believe that Certified Meat Hogs is the answer and fully endorse the certification program originally prepared and adopted by the National Association of Swine Records.

This program has been favorably approved by the agricultural press, by college livestock specialists and by leaders thruout the swine industry. It is sound, constructive and a measure of the fundamental factors essential to profitable meat hog production.

A real proof of superiority is required to certify a litter or a sire on this program. The requirements are comprehensive, measuring productivity, growth rate and carcass value. Carcass standards include both minimums and maximums for length and fatback thickness and a minimum for loin area.

Each measured value tends to serve as a check on the others eliminating the danger of going too far in some respects and at the expense of other factors. Combined as they are, these standards are high and denote superiority in balanced animals from the standpoint of conformation, performance, productivity and consumer approval. They are strong, yet practical and obtainable.

Here are the certification requirements as set up by the program.

A. A Certified Litter

1. Litter must officially qualify for Production Registry.

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(a) 8 pigs weaned.

(b) Weigh 275 lbs. at 56 days, if gilt litter.

(c) Weigh 320 lbs at 56 days, if mature sow litter.

(d) Litter free of swirls, hernia or ridgling boars and 50% of litter eligible for registration.

2. Two pigs from litter must weigh 200 lbs. or equivalent at 180 days.

(a) Weights shall be off truck weight of pigs when delivered at cooperating slaughter station.

(b) Pigs to be delivered for slaughter at weight between 180 and 230 lbs.

(c) Equivalent 180 day weights to be calculated by adding 2 lbs. for each day under 180 days old and deducting 2 lbs. for each day over 180.

3. Same two pigs from litter must meet following carcass standards: (See table below)

(a) Pigs to be delivered to cooperating slaughter station at weight between 180 and 230 lbs. Weight to be off truck weight.

(b) Each pig to be tattooed when weighed off truck.

(c) Loin area to be calculated by means of Planimeter from tracings of loin eye made on parchment paper.

(d) Loin to be broken at 10th rib.

(e) Carcass length to be calculated from front of first rib where it joins vertebra to front of aitch bone.

(f) Fatback to be average of three measurements taken.

(1) Opposite first rib.

(2) Opposite last rib.

(3) Opposite last lumbar vertebra. Measure actual fatback thickness to outside of skin and at right angle to back.

B. Certified Sire

1. A boar that has sired five litters that qualify as certified litters. These litters must be out of five different sows, not more than two of which are full sisters or dam and daughter.

C. Certified Mating

1. The repeat mating of a boar and sow that have produced a certified litter.

Weight	Loin Area Minimum	Length Minimum & Maximum	Fatback Thickness Minimum & Maximum
180 to 200 lbs.	3.5 Sq. In.	28.5" to 32.0"	1.0" to 1.6"
201 to 215 lbs.	3.75 Sq. In.	29.0" to 32.5"	1.1" to 1.65"
216 to 230 lbs.	4.00 Sq. In.	29.5" to 33.0"	1.2" to 1.7"

Consumers Want Meatier Pork in Steadier Supply

A packing house spokesman explains why meat type hogs are important and heavy seasonal swine deliveries a problem . . .

Condensed from Chemurgic Digest

Roy B. Ormond, Oscar Mayer & Co.

THERE are two fundamental and serious swine production problems easily observed in the business of processing hogs into pork products.

One of these problems is the shortage of muscular meaty pork and the excessive supply of fatty cuts and lard. The other is a shortage of market hogs during about eight months of the year, and a very heavy supply during fall and early winter.

The swine industry would be greatly benefited if more muscular hogs were produced. I believe this for several reasons.

Mothers want and buy lean meat in preference to fat meat. Sales tests and sales records show this to be a fact. Cuts from medium finished hogs outsell cuts from so-called finished hogs, or hogs finished to the nth degree. Furthermore, muscular cuts from hogs with high meat to bone ratio outsell lean cuts from "skinny" hogs with lower meat to bone ratio.

Now that a rapidly increasing amount of meat must sell itself in self service counters it is imperative to put pork into these counters which will meet the competition of beef, other meats, fish, poultry, dairy, and other products.

There are only two ways to get meaty muscular pork for self service. One way is to grow it on the farm and the other way is to make it in the packing plants by using knives and labor and "know how" to separate the lean from the fat.

Lard has to Compete

Lard, although the per capita consumption is about the same as it was years ago, has severe competition from other farm produced fats and oils, particularly the vegetable oils.

In the packing plant, overfinished or fat hogs yield exces-

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sive amounts of lard which has to sell in competition with oils from such farm crops as soybeans. These fat hogs also yield cuts that contain too much fat on the outside, between the muscles, and within the muscles.

If meaty hogs equal or excel fatty hogs in prolificacy, feed efficiency and rate of gain, certainly we in the packing industry will welcome every opportunity to encourage their popularity.

Certification Program

In view of the fact that conformation is highly heritable we should encourage and help purebred breeders in their efforts to improve their herd through selection of breeding stock that will produce offspring that is prolific, can use feed efficiently, and will produce muscular carcasses. The swine certification program adopted by most of the breeds should help greatly to improve prolificacy, feed efficiency, rate of gain, and meatier hogs.

An improvement in the program might be to establish an age limit for castration of pigs which are to be used later for certification tests, because late cut pigs would have a muscular advantage which is not a heritable characteristic. Perhaps these pigs should be castrated before the eight weeks weighing, because then the records could be officially made.

When purebred breeders send hogs in for certification weights, for slaughter, and carcass measurements, the packing plants can give help that will greatly encourage keeping of production records and in the proving of meat hogs.

As yet there are all too few certified sires, sires which are proved to have the heritable conformation characteristics which will be passed on to their offspring.

Let us help through present methods to find more certified litters and sires, and through research find ways to more quickly and accurately discover more of them.

Another very important job that needs to be done to help the swine industry is to level out farrowings so that there will be steadier marketings of butcher hogs. A steadier supply is urgently needed.

I hope that the practice of farrowing two litters a year, or the practice of arranging multiple farrowings, results in better use of buildings, facilities, and labor on the farm, and therefore better returns from capital, work, and feed.

Certainly a steadier supply of hogs to market will make possible the better use of packing plant facilities.

We as farmers, processors, storekeepers, restaurant operators, and homemakers urgently need

a steadier supply of hogs and pork.

During the ten year period 1941 to 1950 over half (50.3%) of the pigs born in the United States were born in the three month period of March, April, and May. In several states in the Corn Belt where most of the hogs are produced, the April farrowings are 20 to 25% or more of the yearly total. In Iowa where about 21.8% of the U. S. hog supply was produced last year, 21.9% of their 1955 pig crop was born in April. No wonder that last October the federally inspected hog slaughter was an all time record of 6.1 million head. No wonder that the 1955 November F.I.S. was 6.9 million head, close to the 7.0 million record slaughter in 1943, and that the December F.I.S. slaughter was 7.3 million head, close to the all time December record of 7.6 million head in 1943.

As a result of these heavy seasonal marketings of butcher hogs, many packers must process 40 to 50% of their hogs in 3½ to 4 months.

The practice of breeding previous spring born gilts in December and then having April born pigs to feed on pasture during the summer and finish on grain in the fall has been an old custom. Debt payments were scheduled to be made when the finished hogs were sold in late fall or early winter.

Mother Nature is an even more important factor in seasonal swine production than is habit or custom. She apparently controls the sexual maturing of gilts just as She controls the brooding desire of hens and the sexual maturing of pullets. About 30 years ago Upp and Thompson in Oklahoma found that pullets hatched in December reach sexual maturity, start to lay eggs, in 131 days, whereas, pullets hatched in March or in April reach sexual maturity, start laying eggs in 203 days.

Although in 1955, 21.9% of Iowa's pigs were farrowed in April, there are areas in the state where very many farmers raise mid-summer and mid-winter litters or who arrange multiple farrowing throughout the year. These farmers in large measure use fall born gilts, or sows for their mid-winter pigs, rather than the previous spring born gilts for mid-winter pigs.

Research and Experience

Research at Wisconsin in the Oscar Mayer Company plant where 2967 open gilts were examined, show that of gilts weighing 230 to 279 pounds 56.3% were juvenile in October and only 14% juvenile in January. More research, taking both age and weight into consideration, seems desirable, but practical ex-

perience by farmers and research findings such as these seem to establish sufficient base to encourage the use of sows or fall born gilts to farrow mid-winter pigs and thus help solve the problems caused by very heavy March and April farrowings.

Specialized production of feeder pigs by farmers at the edge of the Corn Belt who keep their sows to farrow twice a year for several years will help to level out farrowings and marketings. Encouragement and help to improve the operations and the breeding stock of these farmers would help the entire industry. Perfection of artificial insemination of swine would be especially valuable to these farmers whose sow herds are not sufficiently large to afford a boar.

Prospects are bright that meatier, more prolific and more efficient breeding stock will become available. We will use our feed to feed more hogs to medium size and finish rather than feed fewer hogs to heavy weights and excessive finish. Feeding and housing facilities will be developed to lessen labor and improve feed efficiency, and better pork can be marketed in steadier supply to consumers who want it.

Monument to the Pig

The pig has been a citizen of what is now the United States for 417 years, according to the National Livestock Producer. He landed first in Florida on May 25, 1539, almost a century before the Pilgrims.

The American pig is a pioneer. He has helped us to win wars. He has helped pull us through periods of starvation. He has helped us "lift the mortgage." He is the second largest agricultural industry from the standpoint of the producer's income.

And yet, without a word of praise, he marches placidly off to the stockyards to become 20 varieties of meat, 50 medicines and a couple of hundred industrial products.

The pig is the most intelligent domestic animal in America—brighter than the dog, the horse, the cow or even the tabbycat.

Hernando DeSoto died in Arkansas in 1542—famed as the discoverer of the Mississippi River. But his real contribution to this nation was the introduction of the pig.

Can Your Best Cow Have 10 Calves A Year?

Report from England on the latest research into the egg transplantation method of artificial breeding . . .

Condensed from The Agricultural Review

R. L. W. Averill,
Cambridge University

ARTIFICIAL insemination is in widespread use as a means of increasing the reproductive potential of genetically superior bulls. It is being used increasingly in both pigs and sheep as well as cattle for the same reason in various countries of the world.

The technique is also of value in overcoming certain forms of infertility; similarly, with regard to greater exploitation of the female germ cells, hormonal injections have been given to ewes on a farm scale and have successfully raised flock fertility.

Two other methods of artificial breeding now under close study are the hormonal induction of out-of-season breeding in sheep, and the exploitation of the ovum-transfer technique.

The first of these two techniques involves the use of progesterone, given as a series of injections over a period of 8-9 days, followed by a further injection of Pregnant Mares' Serum, the hormone used to increase the number of eggs shed at heat. Ewes which are empty at lambing time might conveniently be bred by using this treatment.

Ovum transfer involves the removal of the egg or eggs shed by a 'donor' animal, and the transplantation of these eggs into uterine foster mothers or 'recipient' females, these latter acting as 'live incubators' for the transplanted eggs.

Ovum transfers were first performed in 1890 by Walter Heape at Cambridge when he was interested in the effects of the uterine environment of the rabbit on birth weight, coat colour and other heritable characters. Since that time ovum transfer methods have been developed to a high degree of efficiency. They are widely used in research with laboratory animals, and have been applied, on a limited scale, to

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some of the larger species also. Eggs of known parentage have been transplanted into uterine hosts of other breeds, and studies have been made of the differences between normally-born controls and their transferred litter mates. In the past ten years, increasing interest in ovum transfer has arisen in view of its potential value as an aid to more rapid livestock improvement.

A considerable amount of research on ovum transfer has been carried out at Cambridge and other centers, using both cows and sheep; but in recent years the work, in Cambridge at least, has continued using sheep, which are cheaper than cows both to purchase and to maintain. In the initial studies with sheep, 19 eggs were transplanted and 8 lambs were subsequently born, while in the past two seasons 74 'transfer lambs' of the Suffolk, Border Leicester, and Welsh Mountain breeds have been born following transplantation of some 123 eggs.

In all cases these transfers were effected by the surgical recovery of fertilized eggs of pure-bred parentage, and surgical transplantation into uterine-host animals of different breeds. The donor ewes were pretreated with P.M.S. to induce super-ovulation, and the eggs were transferred either soon after recovery or following storage in refrigerated chambers for a few days. Six lambs have been born from eggs which were transplanted in this way, following storage at 8° C. for 1-3 days.

During the experiments it was deemed advisable to determine the practical limit to the number of lambs which could be developed in the same season from any one set of parents; in this trial 30 fertilized eggs were recovered from 3 ewes following P.M.S. stimulation, namely 13 eggs from a Suffolk ewe, 7 from a Border Leicester and 10 from a Welsh Mountain. These 30 eggs were transplanted, in ones and twos, into 16 recipient ewes of breeds different from the eggs, and five months later 24 'transfer lambs' were born. These lambs had all originated from the three donor ewes and displayed unmistakable characteristics of their true parentage. In addition, the three donors had produced two single lambs and one pair of twins from later matings.

Had the egg recovery technique been more efficient, it is possible that even more lambs might have been produced in this experiment, though a total of 28 lambs from 3 ewes in one season was considered adequate to demonstrate the possibilities of ovum transfer. The egg-storage experiment had shown that there was no necessity for the eggs to be transferred immediately on recovery; they could be kept alive outside the

body of the mother until suitable recipients were available.

To the scientist these findings are of great interest, and it would appear, firstly, that there are few faults in superovulated eggs; secondly, that the transfer technique is a relatively efficient one; and, thirdly, that it can be put to use in many studies concerned with the development and genetic phenomena associated with the early life of the sheep.

Best way to get good replacement cows in a dairy herd these days is to raise them. If you buy surplus stock from another herd owner, chances are you'll be getting some cows that are lower in production than the rest.

To the practical farmer, however, despite the fact that three ewes produced an average of more than nine lambs each in one season, the value of ovum transfer technique may be doubtful. Numerous applications of the procedure are, however, available, perhaps most important being the possibility that a prize cow or ewe might, by this method of propagation, be exploited to produce ten or more offspring in one season, i.e. she could provide more eggs for incubation inside poorer-quality females in one season than she would normally provide in a whole lifetime. This is an application by which the rate of herd or flock improvement could be greatly accelerated.

Another application might be the transplantation of beef-breed eggs to dairy cows in herds where replacement rearing is not carried out. By hand rearing or by multiple suckling, the beef calves produced would form a profitable sideline on such farms.

A further application of the ovum transfer technique which suggests itself is the long-distance transport of eggs, from valuable stock, for transplantation into foster mothers in areas where it is desirable to import improved strains or better breeds. Further research into suitable storage methods will be necessary before this cheap method of importing new blood can replace the present methods of transporting the mature females themselves. These and other uses for ovum transfer are possible developments to which the technique may be applied to the livestock industry of the future.

At present, however, it is important to determine whether any harmful effects may arise from the use of the ovum-transfer technique. Does the hormonal superovulation affect the fertility of the donor female? Are animals less likely to conceive after being subjected to the egg-recovery and transplantation operations? Do the artificially-bred animals lose

their *libido*—the desire to breed in the normal fashion? Do blood-group factors have to be taken into consideration?

The three years' work at Cambridge has shown that the answer to the first three questions is 'no', while the answer to the fourth cannot be given till more transferred animals are available for study of this aspect.

Do the animals suffer in any way from their operations? Again the answer is 'no', as full anaesthesia has been used, and a number of ewes have survived in the three years without exhibiting any loss of vitality or deterioration in condition.

It may therefore be asked, 'What are the disadvantages of the technique?', and the answer is found in the word 'surgery'. With the sheep, it is exceedingly difficult to transplant eggs by other than surgical methods. This drawback in the sheep is due to an anatomical consideration which does not arise in cows, mares or sows, because in these the uteri are approachable by the non-surgical route used in A.I.; but all successful transfers so far made in cows and sows have involved surgery.

Another difficulty which should yield to further research is the recovery of fertilized eggs. In the Cambridge sheep experiments, 320 eggs were recovered from 70 donor ewes, of which almost 30 per cent were unfertilized, and a further 10 per cent were found to be developing abnormally. The number available for transplantation was thus greatly reduced, and a considerable amount of time and effort had to be expended in their recovery. Nevertheless, it is believed that with improvements in the superovulation and egg recovery techniques, the application of artificial breeding in dairy and beef production, at least, may be achieved within the not too distant future.

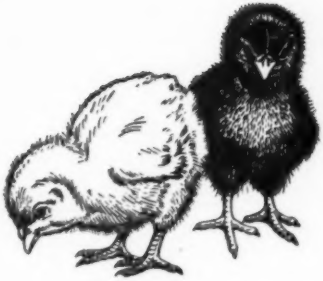
British Views of U.S.A.

America is still a large enough country for things to be left in. You pass derelict dwellings, abandoned cars, the junk of a small community.

No one seems to care; what does it matter?

There is plenty more room, plenty more of everything. If the American economy, in spite of all its efficiency, is built on consumer waste, it is because of this natural profusion. Here is a nation expanding because nowhere yet has it met its bounds.

—*Times Weekly Review, London*



Don't Let Chicks Die

Those little cheepers you buy can convert feed into 24 dozen eggs in 18 months, if you give them a chance . . .

Condensed from Capper's Farmer

Donald J. Bray,
Illinois Poultry Specialist

WHEN your hatcheryman hands you a box of baby chicks and a bag of chick starter, you accept a big job—the job of turning your feed into eggs profitably. One box of pullet chicks can grow into 80 to 90 hens that will lay 3,000 pounds of eggs, all in 18 months.

If you are a top poultryman, they may do even better. The breeder, the hatcheryman, and the feedman are raising the limit of egg performance by the quality of chicks, feeds, and supplements which they provide you. Whether you get the maximum out of your flock is up to you.

After the chicks are in your hands, you are the important one in the poultry profit picture. Don't cut your profit margin by a poor start. How many of these chicks get to the laying house depends largely on how you handle them in the brooder house.

Here are four basic rules for chick brooding:

1. *Give them clean quarters.* Clean, sweep, scrub, and disinfect the brooder house between broods. Why? Because certain germs and parasites can survive for months in the empty brooder house.

Sweep and scrub because disinfectants cannot penetrate thick layers of dust and filth to kill the disease-causing bacteria. Lye and quaternary ammonium compounds are good disinfectants. Don't forget to use them on feeders and waterers. Keep out mites by painting roosts and lower walls with carbolineum or other mite control products.

Let nature's great disinfectant, sunshine, help you with the clean-up job. Several days before the chicks come, open up the brooder house. Set the equipment out of doors.

Keep your chicks off infected ground. Use the same poultry range once every 2 or 3 years. Avoid dense brush and low-hanging trees for shade. Give the sun

Reprinted by permission from Capper's Farmer, 121 W. 8th Street, Topeka, Kansas

a chance to decontaminate your range and shade.

Above all, never let your growing chicks come in contact with hens.

2. *Don't overheat or chill.* Put a ring of cardboard around the brooder. That reduces drafts, conserves heat, and keeps the chicks out of corners where they may pile up when chilled or frightened. Remove the guards after a week or two, depending upon weather and insulation of your brooder house.

Start the brooder several hours before the chicks arrive. Use a thermometer to adjust temperature between 90 and 95 degrees at chick height at the edge of the hover. After the chicks are in the brooder, watch them and listen to them. They will tell you how to adjust the temperature.

If the temperature is right, they will settle into a thin band just beyond the edge of a gas or an oil hover at night. If the temperature is too low the band will thicken as the chicks move in closer to the heat. When this happens, those inside will be crowded and too warm; those on the outside may be chilled and chirping. Too many chicks (over 400) under one hover may cause this same problem.

Temperatures too high will drive the chicks out toward the guard and cause them to extend their wings.

Lower the temperature as rapidly as possible, without causing the chicks to chill or bunch—usually about 5 degrees a week. Lower temperatures "harden" the chicks and stimulate feather growth. But you should be sure to turn up the heat immediately in case of a disease outbreak.

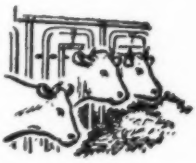
3. *Give them ventilation.* Never let dusty or ammonia-laden air build up in the brooder house. Polluted air is a "stress" factor that may lead to respiratory trouble. More heat and increased ventilation will keep the air fresh and the litter dry. Wet litter is an invitation to coccidiosis.

4. *Give them space to grow.* Over-crowding your chicks leads to cannibalism, slow growth, disease problems, and runts. Allow one-half square foot of space per bird in the brooder house up to 6 weeks.

Debeaking and good ventilation can partially substitute for floor space. But nothing can replace feeding and watering space. One hundred day-old chicks need two 2-foot chick-size feeders and a like number of fruit-jar-type waterers so chicks don't run out of water between choring periods.

These four rules for good brooding are as important now as in the days before medications, vaccines, antibiotics, and growth factors. New products are supplements to, not substitutes for, sound brooding practices.

Buy A Bulk Tank with $3 Milk?



Cream checks just aren't big enough so these farmers are putting in expensive bulk tanks to handle Grade B milk . . .

Condensed from Farm Journal

Dean C. Wolf

PLENTY OF farmers have flinched at the expense of putting in bulk milk cooling tanks for their Grade A milk.

So when we got the word that *Grade B milk* producers were buying bulk tanks, I went to see.

I found it was true—bulk tanks are beginning to take hold on farms producing lower-priced Grade B milk.

This newest of dairy trends is making most headway in Minnesota where already 23 plants pick up Grade B milk from bulk coolers. That's over half of the state's 43 plants. And it's showing up in South Dakota, Iowa, and Minnesota.

Here's what is causing the shift: Many farmers who are selling *just cream* and creameries who are making *just butter*, are having tough sledding, *many have gone out of business.*

Farmers want to sell their skim milk too—it's worth more that way now than for hog feed. And the creameries want it so they can turn out dried skim milk products as well as butter.

So they switch everything from just a cream deal to a milk operation. And instead of laying out money for milk cans, coolers, etc. —they jump right to bulk handling.

You don't have to talk to farmers long to find that they're making more money now than when they sold just cream. One 15-cow dairyman's first milk check was $78 bigger than his last cream check. Another producer with 25 cows got $108 more with his first milk check.

One cooperative creamery manager told me that his producers got $1.50 selling milk for every $1 they got selling cream.

"We had to get into milk," declares C. R. Hove, manager of the Farmers Mutual Cooperative Creamery at Sioux Center, Iowa. "Our biggest producers want cash for their skim milk. We had to buy milk or lose them to plants that would handle it. Bulk handling looked like the best move."

By jumping directly into bulk handling, cream producers and their creameries make some sav-

Reprinted by permission from Farm Journal, Philadelphia, Pennsylvania

ings they wouldn't get if they switched to cans for handling milk. They don't have to buy as much equipment like cans, washers, scales, conveyors and dumps.

"We saved about $10,000 by going into bulk," figures Gordon Harstad, owner of the creamery at Marietta, Minn.

Others, like the Park Rapids creamery point to savings in operating costs: "It costs money to operate a can dumping setup every day, necessary if you take milk in cans," manager Eugene Gaer points out. "With every-other-day pickup of bulk milk, we can even shut down on Sunday, save labor costs.

Bulk handling whips one of the toughest hot-weather problems of butter makers—trying to turn sour cream into good butter. "Ninety per cent of our cream came in sour during hot weather," Harstad told me. "We get 90 score butter from it. But we can easily get 92 score, maybe 93 from the bulk tank milk, and it will outsell butter from cream by a cent a pound or more."

The question I asked everywhere: Can a farmer selling Grade B milk for $3 to $3.25 on 3.5% butterfat basis make the investment in a bulk cooler pay off? To a man, farmers I talked to believe they've made the right move.

For some, it means a market for skim milk without having to quit the creamery they like. Stanley Carlson says he got 30 cents a pound more for his butterfat last summer when the Marietta, Minn., creamery started picking up milk from his bulk cooler.

Farmers selling Grade B milk in cans before bulk handling came along, point to lower hauling costs. They pay 10-15 cents less per cwt. since they installed bulk coolers. That's because plants pick up milk only every-other day, and one truck driver can take care of three bulk producers for every can producer he had before.

A few creameries have kept hauling costs the same but have added the saving onto the price they pay for milk.

The saving in hauling costs almost takes care of the payments on the bulk tank for farmers.

One farmer paid nothing down and has 20 cents per cwt. deducted from each milk check. Some farmers turn in a used can cooler as a down payment. Others get credit from banks, production credit, and other sources.

It's harder to put your finger on savings other than lower hauling costs. Studies have shown that bulk handling eliminates stickage losses in cans amounting to 2.5 cents per cwt. Some farmers swear they get higher butterfat tests and better weights. Others say there's no difference.

He Feeds Silage - Silo and All

Here's something different in storing and feeding silage. An Arkansas farmer builds his silo of baled oat straw . . .

Condensed from Arkansas Farmer

Edgar Hodson, SCS Agronomist

AN Arkansas farmer, a co-operator with the St. Francis County Soil Conservation District at Forrest City, has developed a new and economical method for storing and feeding silage. He uses baled oat straw to build the silo, and then feeds it to his cattle along with the contents.

Dennis Jarratt feeds his cattle with a minimum of labor by shoveling the silage into a feed rack built at the base of the silo. He has learned from experience that the silo should not be larger in circumference than 26 bales of straw, and not more than about 10 bales high. This gives it a capacity of about 200 tons.

In a larger silo the pressure from the silage makes it difficult to hold the bales in place. If the silo is built much higher than 10 bales, there is apt to be considerable waste when the feed is thrown into the feed rack if the wind is blowing at the time of feeding.

Eight poles, spaced at equal distances around the silo, were set in the ground to help make the silo rigid. Two wires were pulled tight around each layer of bales to hold them in place as the silage was blown in. About 100 pounds of No. 8 wire was required to build the silo.

The silage is packed tight by tramping as the filling is done, and should be finished off with a dome-shaped top to allow rain water and moisture from the feed to drain toward the walls. The top is covered with a layer of water-proof paper, and then another load of silage is blown on top to hold it in place.

Feed Rack

After filling the silo, Jarratt builds a feed rack all the way around it and covers the base of the silo with boards to a height of about four feet to prevent the cattle damaging the walls. The feed rack for a silo 26 bales in circumference will accommodate 52 cows without crowding.

The silage is fed by shoveling directly into the feed rack below, using extreme care to see that

Reprinted by permission of the author and Arkansas Farmer, Little Rock, Arkansas

the center of the top surface is always at least two feet higher than around the edges, and to be sure that there are no low places or depressions to collect rain water.

The oat straw of the surrounding silo wall is fed as the silo is emptied, and the cattle eat it as readily as they do the silage. The moisture given off during the process of fermentation is absorbed by the baled straw and makes it very palatable.

Jarratt has not yet decided just what he would recommend to avoid muddy ground around the feed rack when feeding is done in rainy weather. Concrete would do the job but would run the cost too high. A well-drained site with gravel or cinders for the stock to stand on while eating might be satisfactory.

Too Much Feed Required Per Dozen Eggs

One of the reasons many farmers fail to make a satisfactory profit with their laying flocks is the large amount of feed required to produce a dozen eggs. This can be concluded from a report on feed efficiency by a USDA official, Dr. Byron T. Shaw.

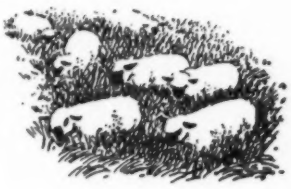
Although hens are laying about 45% more eggs, their feed conversion has actually declined in the last 20 years. It will surprise many farmers to note that it required 6.8 lbs. of feed to produce a dozen eggs in the 1950-54 period, as compared with 6.3 lbs. in 1920-24. Actually egg farmers today are 7% worse off in efficient use of feed. This is contrary to the improvement that has been obtained with broilers, turkeys, hogs, beef cattle and dairy cattle.

"Producers should be getting a dozen eggs with 5 lbs of feed," Dr. Shaw told research workers. "They are actually using about 7 lbs. We can account for about ½ lb. of this in the increased weight of the present day layer. But we can't account for the other 1½ lb. Is it a matter of wasting feed in the hoppers? Are they feeding rats as well as chickens? Is it faulty management?

Most feed dealers know certain customers who are producing a dozen eggs with about 4 lbs. of feed. But, as we see it, feed wastage in the laying house for one reason or another is largely responsible for high cost production. In most farm flocks, hens are charged with feed which they never use, except to turn into litter.

—Frank Holt

Sheepman's No. 1 Problem: Parasites



It's good insurance to de-worm regularly, and dust or spray the flock for lice and ticks. Here's how to do it . . .

(Seventh in a series of articles)

Condensed from Wisconsin Bulletin 470

PARASITE infections limit success with sheep. Just average infection in a flock keeps lambs from gaining weight properly, and reduces the number of lambs born. Quality of both meat and wool is affected. Many infections directly or indirectly cause death losses.

All sheep are subject to parasitic infections. This is one of the first facts of sheep-raising, and an important fact for the sheep-raiser to recognize and understand. Successful production hinges on such recognition.

Experienced sheepmen realize that sound methods for keeping parasites under control are necessary; the key to this control is proper seasonal treatment. The problem must be handled through preventive rather than curative measures. Good management and sanitation are important as a matter of course. These are the great natural defenses against disease, but they are not enough in themselves.

It is important, therefore, to combine drenching with such practices as pasture rotation for complete parasite control. Sheep should always be treated a day or two prior to being placed on new pasture.

Kind of Parasites

External parasites of sheep are the lice, ticks and mites that live in the fleece next to the skin. Internal parasites are those that live insde the digestive tract. Both external and internal parasites seriously affect an animal's health and well-being.

Internal parasites (worms, for example) interfere with normal digestion by actively attacking the lining of the sheep's stomach or intestines; by sucking blood; or by preventing the normal passage of food.

All the different worms known as internal parasites produce their eggs inside sheep. Parasite eggs, so small they require the use of a microscope to be seen, pass out through the sheep's manure. After

Reprinted from Wisconsin Bulletin 470, More Profit From Farm Sheep, published April 1956 by University of Wisconsin Extension Service, Madison, Wisconsin

developing to their infective stage (at which time they have become small worms), the infection is transmitted to other sheep. Clumps of manure around feed and water troughs and salt boxes are common sources of worm infection—one reason why keeping manure out of feed and water is especially emphasized in all parasite control programs.

Parasites of Sheep

Among the important parasites of sheep are stomach worms, nodular worms, bankrupt worms, lungworms, tapeworms, liver flukes, coccidia, ticks and lice.

Stomach worms. Three kinds of stomach worms affect sheep. The first is the so-called "eastern" type, about 1 inch long when full grown. Two other common types are "western" stomach worms, slightly less than one-half inch long. All three kinds damage the lining of the sheep's fourth stomach; the "eastern" type actively sucks blood. Often thousands of these worms are found in the fourth stomach (abonasum) of one sheep.

Constant loss of blood keeps lambs from gaining. Experimentally, lambs have been known to lose 8 quarts of blood in 6 weeks. Heavily infected animals are thin and listless, pale, and generally show evidence of acute or chronic diarrhea (scours).

Stomach worms can endanger an entire lamb crop.

Nodular worms. This roundworm can be identified by its relatively heavy body. It is about 1 inch long, and is most numerous in the sheep's large intestine. The adult worm is a problem in its own right but greater damage is done by young worms.

Bankrupt worms. These are very thin round-worms, less than a half-inch long. They occur in the small intestine, sometimes in enormous numbers. These worms can cause severe weight losses, most generally in late summer and early fall when pastures are poor.

Lungworms. Two kinds of lungworms affect sheep. These worms live in the air passages of the lungs where they irritate the tissues. The result of such irritation is the collection of a bloody fluid, an ideal medium for the development of the agents causing the infectious pneumonias.

Sheep with lungworms have a loose, husky cough and show an increased nasal discharge. Losses are greatest in lambs that have been closely confined with older sheep in late winter and early spring.

Tapeworms. The broad tapeworm is found in both native and imported sheep. It lives in the small intestine, and may be as long as 10 feet. It can cause severe scouring, especially in

lambs. Death losses generally occur only in lambs.

The fringed tapeworm lives in the common bile duct; it is only a few inches long but is considered the more dangerous type.

Liver Flukes. Two kinds of liver flukes appear in Wisconsin flocks. The first kind *(Fasciola hepatica)* apparently is not native. Feeder lambs and breeding stock from outstate areas, where it occurs naturally, have been found infected.

In Wisconsin, Sever Brendum wishes for at least some of the advantages of the "good old days."

Brendum found a receipt issued to his father for taxes paid on the Brendum 76 acre farm in 1890.

The receipt was for $2.23, plus a 4c collection fee. Brendum's taxes for the same farm minus three acres, came to $581.23 last year.

The giant liver fluke of deer causes losses in Wisconsin sheep throughout a wide area in the northern part of the state. Infected sheep die as a result of the young fluke moving through the sheep liver.

Coccidiosis. Coccidiosis is caused by different but related one-celled parasites which partly destroy the lining of the intestine. Heavily infected sheep may suffer bloody scours.

All sheep are susceptible to coccidiosis. But outright death losses generally occur in lambs closely confined with ewes before pasture and in feeder lambs.

To reduce danger of coccidiosis, give careful attention to feed and water supplies. Feed and water troughs are ideal places for these parasites to develop to their infective stage and should be kept as clean as possible.

Some sheepmen protect their feeder lambs from coccidiosis by using a feed mixture containing the drug *sulfaguanidine* which checks the growth of the parasites. Medicated feed also may be fed to lambs when they have to be kept closely confined with ewes.

Ticks and Lice. Ticks and lice travel from sheep to sheep by direct contact as the animals crowd together. The total numbers of ticks and lice build up rapidly when sheep are closely confined. Infested sheep fail to feed properly because they are restless and irritable. Both the quality and quantity of wool are affected.

Until recently, dipping was considered the best method for getting rid of ticks and lice. Now, dusting with a 1½% *rotenone powder* is considered a better control method. Dust the ewes before lambs are born (the ticks prefer the very young lambs).

Dusting is more effective if ewes are sheared before treatment.

The advantages of dusting are obvious. The job can be done in either cold or warm weather. The rotenone dust sifts down into the wool and clings to it for considerable time. Dusting can be done by one man alone.

When dusting the ewes, a half-dozen should be penned in a small area. An ordinary garden duster of the hand-plunger or hand-crank variety is then used. Blowing the dust along the top and sides of the sheep is sufficient; it is not necessary to have it reach the skin or to dust the belly. When dusting young lambs, hold them firmly and apply the dust over the entire body.

President Eisenhower's herdsman for his herd of 100 Angus beef cattle at his Gettysburg farm is Bob Hartley. Until the President selected him for this job he was an assistant county agent in Bucks County, Pennsylvania.

If the ewes are in full fleece, 4 ounces or rotenone per sheep will be required. If sheared, one-half this amount will do the job. Once a flock is free from these pests, any new sheep, such as a ram, should be dusted before being turned in with the other animals. This should be done even though ticks or lice cannot be seen on the new animals.

Spraying sheep has also given excellent control of ticks, lice and mites, providing at least 200 lbs. of pressure is used. Not more than 1 gallon of spray is needed for each sheep in short fleece. Six pounds of 12% gamma isomer of benzine hexachloride added to 100 gallons of water is the recommended concentration.

A record 6.1 million head of cattle and calves were on feed in January, according to the U. S. Department of Agriculture. This was 4 per cent above January's figures in 1956.

How to Treat Sheep for Worms

Treating sheep for worms and other parasites should be a routine part of sheep management. Regular preventive treatment results in healthier breeding stock, better-quality wool, and more and faster-growing lambs.

The one man best qualified to give advice on treatment for parasitic infections is your veterinarian. Use his services—not just to control disease *but to increase production as well.* Worm treatments *can* be used to increase production in addition to removing infections.

Season-by-Season Worm Control

Each year, the ewe flock should

receive the following drenchings —at the time specified.

1. *Two weeks before breeding time,* treat each ewe and each ram with one ounce of phenothiazine to remove stomach worm infection and to help settle the breeding flock in shorter time. This is the same phenothiazine that is commonly mixed with salt.

Make sure that each ewe receives enough of the phenothiazine. This comes as a powder and must be mixed with water—use 1 pound to 3 pints of water. Mix thoroughly; then give 4 ounces of this solution to each sheep. This mixture provides the 1 ounce of powdered phenothiazine. Such a suspension of phenothiazine is always preferred over tablet or bolus form.

Powdered butter is now a reality. A food processor in cooperation with the U. S. Department of Agriculture has developed a product called Beacreme. It is a combination of butter and nonfat dry milk. This product is being sent to Sweden, Finland and Switzerland for use by commercial bakeries.

2. *Before putting in barn for winter feeding,* treat all lambs not yet sold, also those kept over for breeding, with 1 ounce of phenothiazine. Use method described in Step 1. If not treated, they will suffer from worms throughout the winter. If any of the previous drenchings have been missed drench the ewes also at this time.

3. *Within the week before* ewes and lambs go to pasture, treat each ewe with one ounce of phenothiazine powder. Lambs do not need drenchings before pasture. Remember that northern cold winters make pastures clean and worm-free each year. Keep them clean by turning out only clean, worm-free lambs.

4. *June 15 to 30,* treat each ewe with one ounce of phenothiazine and one gram of lead arsenate at the same time. All forty-pound and larger lambs should receive one-half ounce of phenothiazine and one gram of lead arsenate. Do not treat lambs under 3 months of age, or weighing under 40 pounds with 1 gram of lead arsenate. Treat the smaller lambs when they reach the limits described or reduce dosage accordingly. (These treatments are for stomach worms and nodular worms; the lead arsenate is for tapeworms. Another drug for tapeworm treatment is di-phenthane; this may be secured from veterinarians only.)

5. *One of the most important steps in controlling parasites in lambs is to wean them at 4½ months of age.* Disregarding parasites, they will do better away

from the ewes. After lambs are weaned, turn them out on second-cutting hay fields, grain stubble or corn fields (after tasselling). This feed is "fresh"; only lambs can convert it into meat. The ewes can be left on native pasture until time to "flush" them in advance of breeding.

6. At weaning time, treat each ewe with 4 ounces of 1% copper-sulfate-nicotine sulfate solution (blue vitriol and Black Leaf 40). This is for bankrupt stomach and tapeworms. To make the 1% solution mix 1 ounce of blue vitriol and 1 ounce of Black Leaf 40 with 6 pints of soft water, using an earthen jar. Give each lamb 1 to 2 ounces of the solution, depending on the lamb's size. *Warning:* It is very important to keep this solution well-stirred during the time it is being administered. Frequently, sheep have been killed because the last portion was too concentrated, the ingredients having settled.

In England, a water diviner, offers to use his skill to find lost children. "I am sure that if I have a lost child's garments and started where the child was last known to have been my hazel divining rod would lead me to the child," he said.

7. *Farmers in liver fluke areas* may benefit by treating each ewe and each ram with 5 grams of hexachlorethane by mid-November; also again in early January. This drug is suggested as a possible means of preventing fluke losses. Treat lambs held over for breeding flock in the same way. *Note:* do not experiment with hexachlorethane dosages. Use exact dosage given here.

8. *Feed loose trace mineralized salt at all times.* When sheep are on pasture, the salt should always be mixed with phenothiazine—1 pound of phenothiazine powder to 10 pounds of salt. If this practice is followed and the ewe flock is drenched 4 times yearly as advised above, the phenothiazine may be left out of the salt during the winter. (Make sure, however, that the loose trace-mineralized salt is always available.)

Although phenothiazine is not toxic, it is not advisable to drench ewes in the months immediately before lambing. If the above program is followed, drenching these pregnant ewes will not be necessary. The entire cost of drenches for the above program for each ewe would not exceed the value of 2 pounds of lamb.

How to Drench a Sheep

Few jobs having to do with sheep are so frequently done wrong. Two things must be remembered:

(1) Make sure the sheep swallows the full amount of solution. Learn to handle the drench with-

out wastage. Remember, a drench never killed a worm on the outside of a sheep.

(2) Proper equipment, including panels or hurdles, makes the job much easier.

For a liquid drench, use a drenching syringe. If a tablet (or bolus) is to be given, use a balling gun. These instruments are not expensive, and are well worth buying for greater convenience and safety.

Contrary to what some shepherds think, it is not necessary to starve the sheep before drenching.

When giving a liquid drench, use extreme care to avoid getting even a drop of the drench in the wind-pipe. Pneumonia always develops in such mis-treated sheep.

Do not excite or fight the sheep. Back the animal into a corner, straddle and hold it securely. Next, raise the sheep's head so that the nose is level, then insert the stem of the syringe back between the "grinders" and allow the sheep to chew on it. First, give only a small mouthful of the drench; then remove the stem of the syringe. The sheep should then swallow immediately. Administer the remainder of the drench as rapidly as the sheep will swallow it easily. This is important: keep the sheep relaxed, *do not fight it!*

(To be continued next month)

Fields Can Be Over-Cultivated

Too much cultivation isn't good for your soil.

It's not necessary to cultivate again and again until you have a dust mulch on your fields. This doesn't help the soil structure and, most important, it doesn't conserve moisture, says Lyman R. Amburgey, soils specialist for the University of Arizona.

Cultivate only for weed control and, when necessary, to break up hard crusts. Any cultivation other than for these two reasons cuts down on your farm profits.

Labor, fuel, and wear and tear on the tractor and cultivator are added expenses which aren't necessary. At the same time, extra cultivation tears down the soil structure . . . tilth and friability are lost. The dust that you make of top soil by excess cultivation cuts down water penetration. If your field is sloping, there may be loss of tail water which could be in the soil.

Modern highway building methods include packing the roadbed with rubber tires. Your tractor tires, run over a field many times, will pack soil, also. This means less water penetration. Make your field a seedbed, not a roadbed.—*University of Oregon*

Will A Barn Drier Pay Its Way?

These Wisconsin farmers think it will. They get better quality hay, worry less about the weather.

Condensed from Wisconsin Agriculturist

Dan Kasen

HOW MUCH would it be worth to get your mow filled with high quality leafy hay? Would you be willing to pay a couple of dollars a ton more for a few years?

That's close to what a mow hay drier would cost you. It costs about $1500 to install a complete mow drying system in most barns. And $2 a ton would cover this investment and the operating costs.

This may seem like an expensive deal, but experts figure that improved hay quality will make up those costs in just a few years.

Paid for Drier in One Year

In fact, a Sheboygan county, Wisconsin, farmer, Willard Beuchel, claims that his mow drier paid for itself the first year in lower feed costs. Beuchel can back up his claims with records.

Here is how he checked feed costs and production. He fed average quality second crop hay and he kept note of production. When he switched to mow dried hay his herd of 41 cows went up a can of milk.

He checked it another way too. "I cut my protein supplement in half one year when I began to feed mow dried hay," says Beuchel. "And milk production stayed up."

Beuchel has always had a good producing herd. As soon as they were fed high quality mow dried hay they came up in milk. Last year his herd averaged 454 pounds of butterfat.

Beuchel has a hay drying system that is pretty common in the state. It's a fan unit with a slatted mow floor. But unlike most farmers who chop their hay before mow drying it, he mow dries baled hay.

"I know that some people claim that you can't dry baled hay and do a good job," says Beuchel. "But I don't have any trouble. In good haying weather I can cut in the morning and put it in the mow in the afternoon."

He points out, however, that

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he has to be careful to keep the bales a little loose. If they're too tight the drying process will take longer than necessary and the bales get dusty on the inside.

Ray and Frank Russart, brothers in Sheboygan county, have the slatted floor mow drying system too. But instead of baling, they chop their hay. Both of them agree that their mow drier saves them money on feed costs.

The fan unit on their mow drier works off the power take-off of a three-plow tractor.

From 4 to 8 p.m. are the most dangerous hours of the day to drive your car.

"The system is efficient with the tractor," says Ray. "For example, if you walk over the slats with the fan on, the breeze will blow your hat off. But we intend in the future to use a couple of 10 horsepower electric motors as a permanent hook up."

This system must be efficient enough to produce good hay, because they buy very little outside supplement and they are holding a 400 pound butterfat average on 61 cows.

Here's how Stanley Cole, Sauk county farmer, sums up his two years of experience with a mow drier. "It takes the worry out of hay making."

Stanley has had his hay drier two seasons and he figures that now he's gained enough experience with it to get top quality feed. The first year he had trouble blowing the chopped hay in the barn. But he's got that situation licked. So this winter he is feeding top quality hay.

"I had one batch of dusty hay when I dumped a load of green stuff on top of some dry hay without spreading it. But it wasn't the drier's fault," says Cole. "It was mine."

Cole says that he has cut hay in the morning and put it in the barn in the afternoon. But he would rather cut late in the afternoon and chop the next day.

Takes Risk Out of Haying

Many experts say that mow driers are the best way to get first class hay. For example, Orrin Berge, farm engineer at the University of Wisconsin, says that a hay drying unit will take much of the risk out of hay making. And it'll help save hay quality.

Here is the way Berge explains it. Field cured hay must be dried to at least 25 per cent moisture before it's hauled to the barn. This means leaving the hay in the field for as long as two days with the extra risk of getting it rained on and losing the leaves.

A barn drier means more hay per acre, too. Because you save more of the leaves. With a drier in the hay mow, hay can be hauled in at 35 per cent moisture. In good weather this means only a half day of drying in the field.

Don't Waste Money on Unbred Cows

How to cull non-producing beef cows by pregnancy diagnosis . . .

Condensed from Research Report, Florida Agricultural Experiment Sta.

A. C. Warnick, Physiologist

CHECKING your beef cows to see if they are pregnant is an important way to increase calf crops and save feed costs.

Checking, especially in the fall, has several advantages. Cows that are not pregnant can be culled, saving feed cost.

By checking the cows, you know the approximate number of calves to be marketed the next year and can plan pasture management and fertilization. Culling non-pregnant cows cuts down the number of bulls required the following spring. You can use your best bulls on your producing cows. But probably the most important advantage is the selection we put on the cow herd for higher production when we cull the nonpregnant cows which are of inherent low fertility. In one herd of typical range cows on improved pasture, the calf crop was increased from 33 to 88 per cent over a four-year period by such culling.

You can inspect your cattle for pregnancy when they are gathered at weaning time or for spraying. This eliminates the cost of extra handling. However, it is best to examine the cows after the bulls have been removed for at least 3 months. This allows time for the developing calf, or fetus, to be readily detectable with the fingers. An experienced operator can examine from 300 to 500 cows per day, provided there is help to put them through the chutes.

Regular holding pens and chutes are necessary for handling beef cows. A squeeze chute is needed to restrain the cows while the examination is being made. Supply water buckets for washing up and soap for lubricating the operator's arm. A rubber sleeve over the hand and arm protects the operator. Use branding irons or paint to identify nonpregnant cows.

Diagnosing a pregnant cow involves inserting the hand in the rectum and feeling the uterus through the thin rectal wall. Clip fingernails closely and lubricate the arm with soap to prevent irritation and damage to the tender membranes. In the pelvic

Reprinted from a Research Report, published by Agricultural Experiment Station, University of Florida, Gainesville, Florida

canal, you usually feel the cervix which is about ½ to 2 inches in diameter and 3 to 4 inches long. In the nonpregnant cow the cervix is hard. As you proceed forward you feel the uterus and eventually the two uterine horns separate into distinct right and left horns.

The diagnosis is considered "negative" when the two uterine horns are equal in size and there is no enlargement in either side. You feel these structures by grasping the uterus with the thumb and index finger and gently feeling each horn between your fingers. The entire organs can be pulled back into the pelvic cavity for a detailed palpation. In a heifer, the nonpregnant uterus is only about 1 inch in diameter and lies in the pelvic canal only 3 to 4 inches from the vulva. In a nonpregnant cow that has calved several times, the uterus will be 1½ to 2 inches in diameter and may lie at the anterior part of the pelvic canal, hanging partly into the abdominal cavity.

After a cow has been bred 3 or more months, the pregnant uterus lies toward the right side of the abdominal cavity just anterior to the pelvic canal. The rumen lies to the left of the cavity and is usually filled with forage. When the rumen is pressed, there is a "lifeless" feeling, unlike the pregnant uterus. As the fingers are passed along the uterine horns, a considerable enlargement in the pregnant uterus from 4 to 10 inches in diameter, depending on stage of gestation can be felt. The uterus has considerable fluid in which the calf lies.

After the third month of pregnancy it is possible to feel this fetus. After five or six months, the head of the calf usually lies near the pelvic canal and its form is easily recognized. Sometimes the uterus and fetus lie very low and far forward in the abdominal canal. Then the operator must push the entire length of his arm forward in order to feel the uterus. If the uterus cannot be reached and cannot be pulled back into the pelvic canal, you would assume the cow was pregnant. Also, the cervix increases from 3 to 4 inches in diameter during pregnancy.

If proper care is followed in examining the cow, there is no harm to her. Persons who have had experience in diagnosing pregnancy can be 98 to 100 per cent accurate.

NOTE: On the subject of pregnancy testing, see article "I Can't Afford to Winter Unbred cows" in February 1957, Farmer's Digest. This earlier article describes testing by a trained veterinarian. In our opinion, the procedure outlined above should be approached by a stockman only after some training and instruction.

Western Horses-Their Dominant Role Today

The trend to mechanization is strong, but horses are far from being replaced . . .

Condensed from Western Livestock Journal

Bob Hutchinson

RESEARCH and mechanization have opened doors to new concepts in ranching and range management. The tractor, the pickup truck and now—even the airplane and helicopter—all work under the western stockman's guidance to get ranch jobs done more efficiently and quickly.

Yet, with all these developments, and the promise of more to come in the future, no one has come up with a machine to carry you into the brush after an old cow that's trying to hide her calf. And there hasn't been anything invented yet to take the place of a good horse when you're working the rough country or pushing a bunch down off the mountain before the snows hit.

The working horse is still a pretty important part of many western cow outfits. In the "90 mile per hour" atmosphere of today's world, horses are holding their own. Some breed organizations say there aren't enough good horses right now to meet buyer demand.

Stallion's Part

The stallion is the foundation of these good horses that folks want to buy. Through the years, breeders and breed organizations have constantly struggled to improve the type of their animals. This work has demanded strict adherence to bloodlines that conform to type within the breed, and the prepotency of the stallions to pass those desirable characteristics on to their get.

With an upswing in horse interest, the horseman carries an even greater responsibility in his breeding program. For it is up to him—and him alone—to judge his horse colts, deciding which are future stallion prospects and which will be geldings.

Take a look at the growth in breed interest at regional livestock shows in the west. The National Western Quarter Horse Show at Denver in January broke all previous records as to entries. And 85 of those horses sold for an average of $810 to cattlemen

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from throughout the west.

Readers Polled

Recognizing the implications of this trend, Western Livestock Journal polled its readers to get a picture of the western horse situation in 1957. That survey asked how many stallions, geldings, mares and foals were owned by these stockmen; what breeds of horses were used; just how they were being used; and from what areas they were being purchased. Readers were also asked how they filled annual needs—by keeping a band of breeding mares, or by buying replacements from auction sales or ranch sales? Here's what the survey showed.

Majority of stockmen in the Pacific coast states (52%) own Quarter Horses. Second in population were crossbred or grade horses; with Palominos, Arabians, Thoroughbreds, Appaloosas, Standardbreds, American Saddlebreds, Tennessee Walking Horses, Shetlands, Morgans and Pintos following in that order. While almost half the readers reporting said they owned only one breed, 27% said they had two breeds and 15% reported owning three breeds or more.

Stallions are owned by 23% of our readers. But results show that even among horses, it's a woman's world. Seventy-five per cent of our readers said they own mares, while 73% reported owning geldings. Foals were reported by 27% of the readers.

Main Use of Horses

The importance of a good "using" horse can never be underestimated. And here in the west, these animals are a long way from fading out of the picture, as ranch work is the primary use of horses owned by 80% of the ranchers. This helps explain the dominance of the Quarter Horse breed.

While these animals have enjoyed a tremendous wave of popularity over the country during the past 17 years, breeders point out that Quarter Horses have been "using" horses for some 300 years in America. From their beginnings in colonial Virginia, Quarter Horses spread westward until they are now being bred, used to work cattle and raced in all parts of the country.

Versatility was noted in how readers use their horses; as 29% said they use them for pleasure, 13% show them under saddle, 8% race them and 3% use their horses for rodeoing.

Breeding Programs

Bearing out the implied need for well-bred horses today, only 32% of the readers owning mares reported that they bred them annually. And slightly more than one-third of those stockmen do

not own studs, implying a need for stallion service.

To get a picture of future horse needs, readers were asked what they require in the way of replacements each year. Nearly 300 need stallions, while more than 5,000 have to buy geldings. Slightly over 1,100 need mares annually. The survey also finds that ranchers like to buy horses at the ranch.

USDA Announces Supports for 1957 Grain Crops

The U. S. Department of Agriculture announced price supports for 1957-crop oats, barley, rye, and grain sorghums at levels reflecting 70 per cent of the parity price as of January 15, 1957. These 1957 supports are a lower per cent of parity than for 1956 crops of these four grains.

The national average dollars and cents supports for 1957 are:

Oats — 60 cents per bushel for Grade No. 3.

Barley — 94 cents per bushel for Grade No. 2 or better (except mixed barley).

Rye — $1.15 per bushel for Grade No. 2 or better, or No. 3 on test weight only.

Grain Sorghums — $1.83 per hundredweight for Grade No. 2 or better (except mixed grain sorghums).

Changes in the 1957 program from 1956 program provisions include broadening eligibility requirements for oats and restrictions on price support for any of these grains produced in violation of restrictive leases on federally-owned lands. For the first time, the 1957 detailed program provisions for oats will provide appropriate premiums and discounts from Grade No. 3 to reflect differences in quality. The 1957 program also provides that garlicky oats will be eligible for price support. Other eligibility requirements and operating provisions are substantially the same as for 1956 crops.

The national average support rates announced compare with support prices for 1956 crops of 65 cents per bushel for oats, $1.02 per bushel for barley, $1.27 per bushel for rye, and $1.97 per hundredweight for grain sorghums. These support prices were at 76 per cent of partiy as required by provisions of the Agricultural Act of 1956.

For additional information on price supports on these four grains, contact your County Agricultural Stabilization and Conservation Committee. —*New Mexico News*

Are You Milking the Right Breed?

Take a second look. One breed doesn't have all the advantages . . .

Condensed from VPI Agricultural Newsletter

YOUR choice of a dairy breed is subject to many pros and cons. You may not be milking the right breed for your market.

Dr. W. S. Griffith, assistant dairy specialist at Virginia Polytechnic Institute, says dairymen are more "breed conscious" now than they have been for many years. Butterfat has trouble finding an adequate market under the present pricing system. In some states, milk that is low in solids not-fat brings less on the market.

The extremes in butterfat tests are pointed up in the Holstein and Jersey breeds. A normal healthy Holstein cow should produce milk testing about 3.6 per cent butterfat. A normal healthy Jersey cow should produce milk testing 5.3 per cent butterfat.

If your market pays well for high butterfat content, then it will probably be best to keep Guernseys or Jerseys. However, if the butterfat differential is low, Holsteins may be the best breed for your market, Dr. Griffith says. Brown Swiss and Ayrshire cattle produce milk testing about 4.0 per cent and are closer to the low than to the high-testing breeds.

Which cows are cheaper to feed? The average cow in a Jersey herd may produce 350 pounds of fat and 7,000 pounds of milk per year. A Holstein may average 350 pounds of fat and 10,000 pounds of milk. In other words, the Holstein produces 3,000 pounds more skim milk for an equal amount of butterfat as the Jersey. If the Jersey weighs 900 pounds and the Holstein 1,300 pounds, then each 100 pounds of cow produces the same amount of milk in either breed. In terms of feed consumed, five Jerseys can be fed with the same amount of feed needed for four Holsteins.

The five Jerseys will produce 350 pounds more butterfat than the four Holsteins, but the Holsteins will produce 220 pounds more of solids not-fat. Ordinarily, "we would say the Jerseys have

Reprinted from VPI Newsletter, published by Virginia Polytechnic Institute, Blacksburg, Virginia

a tremendous advantage," Dr. Griffith says. However, he points out that several other factors should be considered. Since the Holstein is bigger, she will have a greater salvage value at the end of her productive lifetime. The five Jerseys will need more room than four Holsteins, and the amount of milking time will be 25 per cent greater for the Jerseys than for the Holsteins.

All things considered, Dr. Griffith says, it seems that a herd of good Jerseys is just as profitable as a herd of good Holsteins. Many comparisons have been made in which the information was slanted in one direction or the other, he points out.

He poses another question: "Should we be working toward a higher or lower fat for the breed we prefer?" Take a Holstein producing 10,000 pounds of milk containing 3.5 per cent butterfat. If the fat test were lowered to 3.0 per cent, about 50 pounds of butterfat would be lost and 270 pounds of feed saved. The feed saving would be worth about $9. At that rate, the butterfat would pay for the extra feed if it were worth only 18c a pound. Another loss would be in the solids non-fat, around 20 pounds.

Dr. Griffith says dairymen can get the greater net profit in any breed by following a few simple rules:

Feed every cow all the high quality roughage that she will eat every day.

Treat each cow as an individual and do a thorough job of milking her.

Whatever breed is preferred, keep complete records on all cows.

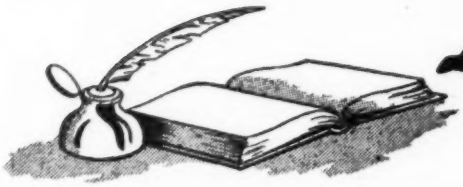
It is not the breed that determines the profit. Profit is the result of a good dairyman with a good feeding program doing a good job of milking good cows.

Round Nest Gathers Eggs

R. S. Ferguson in Alexander County, North Carolina, installed a Kitson egg parlor in his laying house. Ferguson says he thinks he will like the egg parlor better than the community nest.

The egg parlor is shaped like a barrel with nest all around the outside. A door leading into the parlor enables the person gathering the eggs to pick up all of them without walking more than six or seven steps.

Ferguson believes this will be a labor saver when it comes to gathering eggs. The first such parlor to be installed in Alexander County, the parlor is causing quite a bit of interest among the commercial egg producers there. —*North Carolina State College*



Law on the Farm

By Norm Krausz

Fifth of a series on farm law by Norm Krauz of the University of Illinois Extension Service. Articles are prepared with Illinois conditions in mind. Laws in your state may differ.

Trespass by Animals

Someone's cows may do more damage in a few hours than hunters and picnickers would do in several years. The earliest legislation on this subject in Illinois appeared in 1819. Since that time it has been revised five times, the latest change being made in 1935. The present law reads:

"If any horse, mule or ass, or any cattle, hogs, or sheep, or other domestic animals, shall break into any person's inclosure, the fence being good and sufficient, the owner of such animal or animals shall be liable, in a civil action, to make good all damages to the owner or occupier of the inclosure. This section shall not be construed to require such fence, in order to maintain an action for injuries done by animals running at large contrary to law."

It is further provided that trespassing animals may be taken up and retained until their owner makes good the damage that was done, plus paying the cost of keeping and feeding the animals. However, the person taking them up must notify the owner within 24 hours or, if the owner is unknown, post notices at some public place near the premises. The Illinois courts, in interpreting this law, have laid down the following principles:

Milk production in early 1957 is at record rates. Total for the year is likely to exceed by about two billion pounds the 1956 peak of 127 billion. Supplies of feed are large and milk prices are above average in relation to feed prices.

1. The term "animals" includes poultry, and the owner of poultry has a duty to confine them so that they will not trespass.

2. Dogs and cats are not trespassers unless a local ordinance requires that they be confined. However, dog and cat owners

may be held liable for actual damage caused by their pets.

3. When animals escape through a division fence, their owner may not be held liable if escape was made through the adjoining owner's portion of the fence and evidence shows that such portion of the fence was not in good repair.

Another law, passed in 1895, makes it unlawful for animals to trespass on another's property, fence or no fence. If an owner does not use reasonable care in restraining his animals, but allows them to roam the countryside, he will be liable in damages to anyone who is injured. Also, there is a possible fine of two to ten dollars for each offense.

There is an important exception to this second law: If the owner or keeper of animals can show that (1) he used reasonable care in restraining them, (2) he did not know they were trespassing, and (3) they trespassed on unfenced (or poorly fenced) lands—then he is not liable for injury to person or property caused by the trespass.

Each year lightning kills about 400 people and injures more than 1,000 others. Most of these people live on farms.

Full-Season Weed Control is Prospect

Prospects are good that farmers will have a chemical weed killer that will have effect from planting time to harvest. The date is so close, in fact, that one such chemical is adapted specifically for corn, says S. K. Ries at Michigan State University.

He said there is a trend in weed control research towards this end. Only a few years ago most researchers felt that chemicals should be selective post-emergence control. But recent tests have shown that this is probably not the most practical method.

Newer types should be applied at planting time, or near emergence time of the seedlings. Then, for the balance of the growing season, effective weed control should be assured without added expense of extra control methods such as cultivation or hand weeding.

Aim is to have a residual toxicity—long lasting poisonous effect to newly sprouted weeds. Then with such an effective means of weed control the weed pest can almost be forgotten once weed killer is put on soil. —*Michigan State University*

Ask Your Veterinarian

Here's a roundup of profit-saving tips for keeping your livestock and poultry healthy.

Condensed from The Farmer

"IF YOU were farming right now, what would you watch for most carefully to avoid outbreaks of disease among your livestock and poultry?"

That question was asked of 19 practicing veterinarians scattered across Minnesota and North Dakota.

This is how they answered:

"Don't baby feeder cattle, let them stay outdoors" . . . "be on the alert for dust pneumonia, erysipelas and cholera in hogs" . . . "don't turn western lambs directly into cornfields, even if they've been vaccinated for overeating disease" . . . "keep dairy cows out of drafts, and don't sell one just because she won't settle easily" . . . watch for 'CRD' (chronic respiratory disease) in chickens and turkeys."

"Feed your best hay last" . . . "add extra vitamin A if you're feeding old corn, purchased from government storage" . . . "use sun lamps on calves" . . . "keep a fever thermometer handy" . . . "dry teats carefully after milking" . . . "vaccinate your next cat before bringing it on the farm, if other cats have died."

"And get a proper diagnosis. Do that first, before anything else."

That last point—proper diagnosis—was the one most stressed by all the veterinarians.

"Proper diagnosis is vital," says Dr. L. H. Pint, president of the Minnesota Veterinary Medical Society, and a practicing veterinarian at Austin, Minn. "Before you begin any treatment, you've got to know the disease you are dealing with.

"A farmer in my area lost his entire herd of 85 hogs this fall because he, a neighbor and a drug peddler treated them for erysipelas. The hogs actually had cholera."

In another case, a farmer vaccinated hogs for cholera. They had bloody dysentery. That farmer lost 90 head of pigs, weighing 100 pounds each, from a herd of 130. A poultry flock-owner dosed his hens with ready-made medication because they had "something." The something

Reprinted by permission from The Farmer, St. Paul, Minnesota

turned out to be blue comb. He lost one-third of his hens, plus production from his entire flock for months.

A Southwestern Minnesota farmer lost 25 feeder lambs he turned into corn stalks immediately after getting them home and just after they had been vaccinated for overeating disease.

"Vaccinating for overeating disease (enterotoxemia) is excellent preventive medicine, says Dr. Joe J. Kelly, Marshall, Minn., veterinarian, "but it's no cure-all. Overeating vaccine prevents buildup of harmful toxins in lambs' stomachs during full-feeding. It does *not* take care of lambs that gorge themselves. Those 25 lambs died from eating too much corn. They weren't used to that kind of feed."

Dr. Kelly recommends putting lambs on prairie hay or dry grass pasture for the first two or three days after they arrive from Western ranges. "Don't start stuffing them immediately. Give them a chance to rest, then start them on feed gradually. Remember, they have just come off range, they aren't used to Corn Belt feed."

Conditioning Livestock

He suggests vaccinating for enterotoxemia about a week after lambs arrive. Increase their ration until they reach a sustained full-feed about two weeks after vaccination. "That gives the vaccine time to take hold so it can prevent buildup of toxin during latter stages of the feeding period."

Feeder cattle, too, need to be conditioned to Corn Belt feedlots.

"Western calves come right off open range with heavy coats, ready for winter. They're used to being outside. So don't baby them. Don't put them into a warm, closed barn. Let them sleep on the snow, or put them where they can move in and out of an open shed. They'll be healthier that way," says Dr. Kelly.

Another good idea with cattle, both beef and dairy, is to guard against shipping fever.

One Southern Minnesota farmer took a loss because shipping fever spread through all 148 of his Western calves this fall, with one bunch after another catching it and requiring treatment. His doctor bill could have been largely eliminated and the shipping fever nipped in the bud with a one-shot treatment of streptomycin for each calf immediately after arrival.

Northeastern Minnesota has a bad case of shipping fever. "We have had some terrific cases in the area north and east of St. Cloud and Anoka," says Dr. R. L. West, secretary of the Minnesota Livestock Sanitary Board. "Farmers buy a few cattle and mix them in with their herd at home. The new ones don't die, but the rest of the herd may if the dis-

ease isn't stopped in time." What can be done to prevent that loss? Vaccinate the home herd and isolate new animals for the first three weeks they are on the farm. Farmers, not stockyards representatives or veterinarians, have the responsibility of preventing the spread of shipping fever on their farms.

The annual cost of grain eaten or contaminated by one rat is estimated at 20 dollars. The annual room and board cost of four rats is about equal to what most farmers pay for a ton of commercial feed.

Drafts and Pneumonia

"Animals exhibiting rapid breathing, nasal secretion, coughing, elevated temperature and being off feed should be suspected of having pneumonia or shipping fever," adds Dr. I. A. Schipper, veterinarian at North Dakota Agricultural College.

Pneumonia, like shipping fever, is bad this time of the year.

"Anytime I get a call to check a dairy herd for pneumonia," says Dr. Bruce Hohn of Rochester, Minn., "I look first for the cow directly below the hay chute, or next to an open door. She stands in a draft, and she catches pneumonia first."

What should be done to prevent pneumonia? Watch humidity and ventilation. One farmer last winter had 16 heifers and 16 of 18 cows catch acute pneumonia in a barn that wasn't ventilated. The money that farmer put out to stop disease could have gone a long way toward buying a ventilating system, had he taken preventive measures first.

Another aid to saving money and keeping veterinary bills low is a fever thermometer. Some farmers keep a rectal thermometer handy in the barn. When a cow doesn't look just right, they check. If temperature is above 102.2° (101° to 102° is normal) they call the veterinarian. "Those farmers are our best customers, and it costs them the least amount of money," says Dr. Hohn. "When farmers can give us temperature over the phone we have a better idea what to be prepared for, and can tell immediately if it's an emergency," adds Dr. D. D. Hagen, also of Rochester.

Lamps for Calves

Still another aid to holding pneumonia and rickets in check, especially in calves, is a sun lamp —one that gives off vitamin D. "I've got dairymen in Steele County who have improved their herds 100% by installing sun lamps in barns," says Dr. Darrell E. Trump of Owatonna. "Calves need more vitamin D than they get. Installing sun lamps is one

of the best things dairymen can do, and they are not expensive."

A germicidal lamp (ozone light) is also a good bet for calves. Glen Wetzel, Steele County, has used a germicidal lamp 24 hours a day for most of the past five years. And he has eliminated 95% of his trouble with colds, pneumonia and scours in calves. "We were always troubled by pneumonia before," says Mr. Wetzel. "We could knock it out with penicillin, but it would come right back again. The month before we started using the lamp our bill for drugs was over $100. Then, the trouble stopped. We know it pays."

Mr. Wetzel has his germicidal lamp hanging about seven feet above the floor of his calf pen, which is bedded with finely ground corncobs. The pen, rectangular shaped like the lamp, is about 10 by 20 feet in size. Fifteen calves are kept in it until they are six to ten weeks old. Then they are moved to a larger pen and a younger group takes their place. A second germicidal lamp has now been added above the second pen.

With hogs, dust pneumonia, erysipelas and cholera offer the worst threats to farm profits.

"Dust pneumonia is a serious hazard on farms in Southeastern Minnesota," says Dr. R. C. Dodds, Caledonia veterinarian.

Dust pneumonia is worst in the fall or spring," continues Dr. Dodds. "Hogs track mud into their sleeping quarters. Bedding becomes dusty and hogs develop a continuous cough. Damage is greatest to hogs about ready for market. To prevent it, watch sanitation and keep houses draft-free. Check with your veterinarian at the first sign of coughing. He can prevent its spreading to the entire herd."

Signs of Erysipelas

"Swine erysipelas is like a thief in the night," adds Dr. Glen Nelson of New Richland, Minn. Erysipelas may not be spectacular, but it's costly and unpredictable."

Erysipelas is bad throughout my area. "I see a case every two or three days — sometimes only chronic ones, but those often cost more in the long run than acute flare-ups. Farmers who see hogs with swelling or lameness in the knee joints, or a few dead pigs that look like they may have been laid on, should call their veterinarian. He can vaccinate to protect uninfected ones, and treat those infected. Usually pigs will gain better after being vaccinated, even though nothing appeared to be wrong before."

"Not enough vaccination is our biggest worry with cholera," says Dr. Pint of Austin. "There have been three outbreaks of cholera this past summer in herds not vaccinated the past couple

years. One farmer lost 45 head of 150-pound hogs. Another lost eight sows and 60 pigs. A third lost about half of his herd of 80."

Statewide, the veterinarians estimate there has been a 20% reduction in cholera vaccination in Minnesota, brought on probably by lower hog prices the past year or two. But, hog prices are expected to be up 10% to 20% this winter, so it will no longer pay to gamble on not vaccinating. Actually, not vaccinating is a poor gamble at any time. Hog cholera costs U.S. farmers "at least" $24 million a year, according to USDA estimates. Thirty-seven states reported 1,690 outbreaks during the first eight months of 1956, affecting 35,000 hogs—and those figures are not considered complete.

An advertisement for a butcher's assistant advised applicants they "must be able to cut, skewer and serve a customer."

What else can farmers do to keep livestock healthy and profitable?

"Watch the quality of your feed," answer at least five of the veterinarians. "We've had several cases of vitamin A deficiency in feeder cattle the past several months," says Dr. R. J. Tobola, Jackson, Minn. "In some cases it has been due to low-grade roughage. In others the cause has been two or three-year-old corn, purchased out of CCC storage. First symptoms are loss of appetite, going off feed, watering of the eyes and diarrhea. Cattle will gain slowly, or even lose weight. The remedy is vitamin A supplement added to the ration. But, check with your veterinarian first."

"One of our chief causes of trouble in Northern Minnesota is feed deficiencies," adds Dr. T. P. Nenkervis of Eveleth. "Many dairy cows have milked themselves out of calcium, in particular. They have trouble calving and calves are weaker. Deficiencies in phosphorus, potash and magnesium are also showing up in soil tests. A lot of this trouble can be eliminated by adding lime and fertilizer according to soil test needs. And, a good mineral supplement should be fed at all times."

Dr. R. E. Shigley, Minot, N. Dak., reports the same mineral shortage in his area. "Phosphorus especially is in short supply. Feeding tracemineralized salt will help keep livestock healthy and thus ward off many ailments," says he.

"Feed your good second and third cutting hay last," says Dr. M. X. Parent of Foley, Minn. "Save it until late winter when cows need vitamin A more." Poor pasture robs cows of vitamin A,

even during summer months, points out Dr. Parent. "June grass pastures just won't do the job. They are deficient in vitamin A. From July until cows are housed for the winter, they go down hill if not turned onto good tame pasture.

"Sterility often is tied directly to vitamin A deficiency," he continued.

"Lack of proper nutrition often is a cause of sterility in my area, too," adds Dr. V. L. Dahl of Arlington, Minn. "Shy breeding may be due to a hormone imbalance or a chronic infection of the uterus. Or, some cows may retain an obstruction to breeding from previous calving."

Don't Overcrowd Calves

"Don't overcrowd baby calves," says Dr. R. S. Kufrin of Benson, Minn. "Several farmers in my area are now using individual stalls for small calves, tying them with tie chains to separate feed mangers. That prevents a lot of disease trouble from spreading from one calf to another, and keeps calves from sucking ears and navels."

"If chickens go off feed, down in egg production, have a nasal discharge, watery eyes and cough or sneeze, they may have CRD—chronic respiratory disease," says Dr. B. S. Pomeroy, University of Minnesota veterinarian. "CRD doesn't kill many birds, but it causes severe losses through slow gains in turkeys and broilers, or loss of production in hens. And it paves the way to secondary infections which can be fatal.

"If an outbreak occurs, market the flock as soon as economically possible, and disinfect equipment. Don't raise young birds near old."

Also, consult your veterinarian rather than rely on some "cure-all" ready-made medication. "Millions of dollars are lost every year on quack remedies," says Dr. E. H. Gloss of Gaylord, Minn. "In most cases they do no good, and often are actually harmful because treatment is for the wrong disease. Veterinarians seldom get cases that have been dosed with quack remedies until animals are so bad they are beyond help.

"The poultry industry is imposed on more than any other by quack remedy peddlers except possibly swine."

What else?

"When building a loafing barn, be sure to include a warm stall where animals can be confined," answers Dr. Parent of Foley. "Without such a room, sick animals won't get the care they need, and a veterinarian has no place in which to work. I've actually seen cows with prolapsed wombs frozen solid from winter exposure. Also, be sure teats are dry before cows are turned out of loose housing milking parlors during winter months."

They Changed Milk Production to Meet Demand

Here was a college town confronted with seasonal milk needs that didn't coincide with production. Forty-two producers met the challenge . . .

Condensed from Western Dairy Journal

John T. Roberts

TAKE a college town, normal population — 6,000. In late September each year, double the population; and early June, cut it suddenly back to normal. What do you have? A town where milk used in October averages 20,000 lb. a day compared to 12,000 lb. in June, and only 9,000 lb. in July.

How do you produce for a town like that?

You set up a shed that produces milk when the consumption is up and goes dry when the consumption is down. Every dairyman knows that setting up a level production herd is a tough proposition. In Pullman, home of the State College of Washington, it is obvious that unlevel production was made to order.

Trouble is that traditional unlevel production comes with the peak in June and July—just when Pullman and a lot of other college towns around the country need it least.

The answer then, obviously, is unlevel production based on fall freshening. Sound easy? It isn't. You have to fight prejudice; the tradition that it's against nature for cows to calve anytime but in the spring; and occasionally the word of a dairy scientist that cows freshening in the fall won't produce as well as spring fresheners.

The Pullman milk production story, though, is one of applying known dairy science principles to the solution of a commercial milk problem.

Credit for this accomplishment at Pullman goes to 40-year-old Richard A. Smith, president and manager of the Milky Way Dairy, director of the Milk Industry Foundation, director of the International Assn. of Ice Cream Manufacturers and former mayor of Pullman.

He comes from a family of dairymen and knows dairying—from both sides of the milk can.

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He decided in 1946 to see if he could do something about Pullman's unlevel production problem. It was a tough time to start. College enrollment was at an all-time high (it is only now getting back to the 1947 veteran-induced peak), the number of faculty members was up and construction men, building on the campus and elsewhere in the town, added to the population.

When the start was made to convince farmers they would make more money if their herds dried up in June, Dick and his field supervisor, Howard Copenhaver, were armed with enough charts, graphs and statistics to convince a Congressional investigating committee.

"It wasn't easy, but we just kept plugging at it," Smith says now. "Toughest part was overcoming farmer indifference, and the biggest problem was getting by the barrier of 'it can't be done.' Why, we even had a dairy scientist tell us that."

The two set up a series of evening meetings at which dairy authorities talked on subjects, such as breeding, feeding, sanitation, management, silos and silage, and veterinary problems.

These meetings proved so popular that even after the producers were convinced on fall freshening they still wanted the meetings held.

Conversion started in September 1949. Now there are 42 producers shipping milk to Milky Way on the fall freshening schedule.

A typical small producer at Pullman is A. W. (Dutch) Kienholz who has a herd of 25 Holsteins.

Dutch got into fall freshening when he bought the Christopherson herd at Monroe in the late fall of 1949. He had kept cows before and even sold cream, but he sold his first Grade A milk in January 1950.

Dutch now has 16 of his own heifers in production. And his whole herd is on fall freshening, even the cows that were spring fresheners when he bought them. He has used artificial insemination in some cases and has held cows over for a year without breeding them to get them on the fall freshening program.

The plan has worked, and Dutch has found that:

"A fall freshening herd will yield a greater net return for labor and management than will herds with other seasonal patterns of freshening when fed the same type and quantity of feed."

Dr. J. C. Knott, director of the Institute of Agricultural Sciences at Washington State, says it is better to change over to fall freshening by delaying breeding because "fall off of milk production is delayed, and it is easier on the

cow's reproductive system."

Kienholz and others have found that delayed breeding also brings an upswing in production when cows freshen again. His own high production records tend to bear him out. Last year his 19 cows on test averaged 15,310 lb. milk and 516 lb. fat.

Production on fall freshening cows hits two peaks. The second comes when cows go on pasture in the spring. Spring freshening cows reach their peak at this same time, but fall off for the rest of the lactation period.

"Fall freshening also has the advantage of having cows dry during July and August, leaving more time for field work," Kienholz points out. He grows wheat and peas in addition to his dairy operation on his 160 acre Palouse farm.

"More time to care for the cows when they are freshening leads to better production, too," Dutch added.

No attempt was made to determine whether spring or fall freshening cows produce the greater volume of milk, but Kienholz's records show that cows changed from spring to fall freshening by delaying reproduction increase their production.

There still are the Christmas and spring vacation periods to cause the Pullman consumption curve to drop sharply away from the production curve. But when the big population changes come in the spring and fall, production and consumption curves now move together.

The whole Pullman solution is a practical demonstration of what can happen when science and public relations are applied to a problem in dairy economics.

Irrigation Factors

Three important factors should be considered by farmers who are planning to irrigate crops for the first time this summer. Dan Wiersma, extension agronomist at Purdue University, says attention should be given the water supply, soil type, and crops to be irrigated.

Water must be located close enough to make it economical for irrigation. The quantity of water must be sufficient during the hot, dry season of the summer for the intended irrigated acreage.

According to Wiersma, water can be applied to soils of a wide range in textures and topography. Irrigation, however, will give the greatest returns on well-drained, droughty soils.

To make irrigation pay, raise a crop which responds to the additional water and gives a reasonably high cash return.

—Farm News from Purdue

Five Minute Hog Chores

Hogs take too much time? This Nebraska farmer cuts his chore time to a minimum.

Condensed from Nebraska Farmer

Homer Fine

CHORES for more than 200 hogs done in just five minutes?

Sounds impossible. But that's just normal morning and night routine for Waldon Erickson.

How does he do it? Well, he has a mighty handy set-up on his 260-acre farm three and a half miles east of Funk, Nebraska. Self feeders and automatic waterers are the keys to Waldon's five minute choring program. The porkers do most of the work themselves.

Waldon was feeding 97 spring pigs farrowed in March 1956, as well as 97 fall pigs farrowed the last of August and a dozen brood sows. That makes a total of 206 head to chore.

The feeder pigs are self fed on separate bromegrass pastures and the sows are being hand fed to market condition. Choring many times is merely a matter of seeing that there is feed in the self feeders, that the automatic water fountains are working and, of course, throwing shelled corn and alfalfa to the sows.

At other times, he fills the self feeders with 45 per cent protein supplement and in a separate compartment rolled or ground corn or milo. Waldon says he would just as soon feed the grain sorghum as corn. The younger pigs get pig supplement prior to being switched to the fattening supplement.

Waldon selects about 15 gilts to keep for brood sows and raises two litters before sending the sows to market. He usually breeds 15 sows for spring farrowing in February or March and a dozen for fall farrowing. This year he has 97 pigs from each farrowing.

He uses farrowing stalls and heat lamps when needed. The pigs are given a dry pre-starter as a creep feed and at about 10 to 12 weeks are wormed. They are put on brome pasture just before weaning.

He likes to farrow early enough in the fall so that the pigs get

Reprinted by permission from Nebraska Farmer, Lincoln Nebraska

some growth on them before cold weather sets in. His cement pit waterers—home made, by the way—stay out on the edge of the pasture all winter. To prevent freezing, Waldon puts an electric light bulb in each waterer. He uses either a 45 watt or a 100 watt bulb, depending on the outside temperature. Otherwise, his winter feeding program is much the same as his summer program.

When Waldon's pigs are 210 to 220-pounders, they are sorted and sold.

Waldon can sort a load in just a few minutes with the home-made pig sorter gate for the width hog he wants to load and runs the whole bunch through the pen. The lighter hogs walk through the gate; the heavies stay in the pen. The heavy hogs left in the pen after one or two screenings with the gate are loaded into trucks and hauled to the sale barn in Kearney. The entire set-up is designed for efficient and easy hog care, which is easy both on Waldon and on his hogs.

Everything seems to be evened up in this life. The fellow with less hair to comb has more face to wash.

And that has a big effect on hog profits, too. The better condition the hogs are in, the more money they bring. And the less labor Waldon has invested in them, the more profit he gets.

Waldon raises part of his grain requirements and buys some. This year he had 110 acres of irrigated corn for silage and grain, as well as grain sorghum, alfalfa and wheat. The young pigs will be used to glean the cornfields behind the picker.

Although his pig business is the top farm enterprise, Waldon usually feeds 40 to 45 head of beef cattle. The beef steers are grown to 1,000 pounds on a ration of corn and sorghum silage, alfalfa and rolled corn concentrate.

He has two 30-foot deep pit silos—one 10 feet in diameter and the other 12 feet in diameter—that are filled with mixed corn and sorghum silage for the steers. Waldon cuts one row of corn and one row of Atlas forage sorghum alternately to get the blend he likes best.

The pit silos are emptied with a big bucket that swings on a boom. An electric motor lowers and raises the bucket of silage and the boom swings the bucket over the feed bunks for emptying.

Sides of the two silos extend about six feet above ground to prevent accidental falls by people or animals.

Waldon's steers don't get all the silage they can eat. They are also fed alfalfa hay and rolled corn.

Waldon's isn't a real fancy layout. But it's handy and it works.

High Roughage Feeding for Calves

Interesting results of research at Ohio Experiment Station into the feeding of dairy calves . . .

Condensed from Jersey Journal

J. W. Hibbs and *H. R. Conrad*
Ohio Agricultural Experiment Station

RESEARCH in calf nutrition at the Ohio Agricultural Experiment Station in recent years has resulted in a high roughage, low cost system of raising healthy, dairy calves.

In general this system involves limited milk feeding for about 7 weeks, free choice feeding of good quality, mostly legume hay after three days of age, the use of a simple grain mixture limited to about one-half the amount of hay being consumed, and cud inoculations to provide an early, reliable source of rumen microorganisms.

The economy of the high roughage system is based on (1) consumption and digestion of large amounts of good quality roughage, which is made possible through early development of mature type rumen function and (2) the use of a simple grain mixture.

In this system the requirements for high quality protein and vitamins of the B complex are provided by the synthetic processes of the rumen microorganisms using mostly home grown feeds. Thus, the need for complex, high cost calf starters is eliminated.

Cud inoculations using *fresh, warm* cuds from older cattle in the herd should be given each calf at approximately 2, 3, 4, 5 and 6 weeks of age. The inoculations are used on the basis that many of the kinds of rumen microorganisms, including both bacteria and protozoa, usually seen in the rumens of dairy cows can be established by no other known method during the first few months.

Association with older cattle (the natural method) has proven to be too slow and uncertain to be practical especially where calves are isolated. And it is desired to get rumen microorganisms established before milk is

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taken out of the ration.

Our data thus far indicate that cud inoculations do not result in increased growth where good quality hay is fed in a 2:1 ratio with a simple grain mixture.

The following suggested feeding schedule can be used in raising calves to 6 months of age using either loose or ground hay.

As many cattle will be slaughtered in 1957 as in 1956, but average carcass wts. may be enough lighter to reduce total beef output to some extent, say U.S.D.A. marketing officials. Hog production will be less than in 1956 and sheep production about the same. Cattle prices are expected to stay above their lowest points of 1956 and may average slightly higher.

Whole Milk Feeding

(Extra milk first two weeks)

Days of Age	Jerseys lbs./day
0-3	Nurse dam
4-7	10
8-14	8
15-21	6
22-28	6
29-35	6
36-42	6
43-35	4
46-49	2
50-	0

Feed one-half the daily amount at each of two feedings (a.m. and p.m.). A good milk replacer can be substituted for all or part of the whole milk after the second week. Milk feeding should be extended beyond seven weeks if calves are slow starting to eat dry feed.

Grain Feeding

(2:1 hay to grain ratio)

Age (Weeks)	Jerseys lbs./day
0-4	0.0
5	0.3
6	0.5
7	0.7
8	0.9
9 & 10	1.2
11 & 12	1.5
13 & 14	1.8
15 & 16	2.0
17 & 18	2.2
19 & 20	2.4
21 & 22	2.6
23 & 24	2.8
25 & 26	3.0

Suggested Grain Mix*

Ground or cracked shelled corn — 500 lbs.
Ground or crimped oats—365 lbs.
Soybean oil meal— 125 lbs.
Iodized salt— 10 lbs.

*In many cases the regular dairy herd mix would be satisfactory.

The above amounts of grain fed during the week indicated will approximate a 2:1 hay to grain ratio based on the average Jersey calf when hay is fed free

choice. Adjustments should be made for extra large and small calves so that a 2:1 hay to grain ratio is maintained, with a 3 lbs./ day grain limit.

Hay Feeding

Good quality hay, preferably second or third cutting, containing at least three-fourth legumes should be offered free choice after the third day. Always feed 10 to 15 per cent more than the calf will clean up and change each day after the calf is eating about one-half pound daily.

Investment per worker in agriculture has tripled during the past 15 years.

The refuse can be fed to older cattle. Weigh or estimate the amount of hay being eaten frequently to help in the adjustment of grain feeding.

If desired the hay can be chopped or coarsely ground through a three-fourth or one inch screen, mixed with the grain (2 parts hay to 1 part grain by weight) and the mixture fed free choice. If the mixture is dusty a palatable feed can be made by mixing with an equal weight of water and allowing the wet mix to soak between feedings.

Water, Minerals, Vitamins

Fresh water, iodized salt and bone meal should be provided at all times. The salt and bone meal should be kept in separate containers so that the calves are not forced to eat salt in order to get bone meal and vice versa.

Ten thousand units of supplemental vitamin A per day should be fed in the milk during late winter and early spring months to assure adequate intake of this important vitamin.

Cost to Six Months

The table below shows the average growth, feed consumption and cost of raising calves to six months of age on the high roughage system with limited milk and grain and loose hay.

	Jerseys
Whole milk, 7 wk. (lbs.)	250
Alfalfa hay, (lbs.)	550
Simple grain, 14.5% protein (lbs.)	260
Cost to 6 months	$28.34*
Gain, (lbs.)	184
Cost/lbs. gain	$0.15
Final wt.—6 mos., (lbs.)	237

*Feed costs used were: Milk, $4.50/100 lb.; Hay, $30./ton; Simple grain, $3.40/100 lb. Approximately 40% of the total feed cost to six months was for milk.

The table below shows the average growth, feed consumption and cost of raising calves to six months of age on the high roughage system using extra milk for the first two weeks with high roughage pellets fed free choice to four months of age. Loose hay and grain were fed after four

months at a 2:1 hay to grain ratio with a 3 lb./day grain limit.

	Jerseys
Whole milk, 7 wk., (lbs.)	292
High roughage pellets, 2:1 hay to grain (lbs.)	313
Alfalfa hay, (lbs.)	454
Simple grain, (lbs.)	202
Cost to 6 months	$33.65*
Gain, (lbs.)	216
Cost/lbs. gain	$0.16
Final wt.—6 mos., (lbs.)	262

*Feed costs used were: Milk, $4.50/100 lb.; High roughage pellets, $2.50/100 lb.; Hay, $30./ton; Simple grain, $3.40/100 lb. Approximately 40% of the total feed cost to 6 months was for whole milk.

Research on early rumen function and high roughage feeding of calves is being continued. Sufficient evidence is now available to show that satisfactory herd replacements can be raised at lower cost using the high roughage system than with other available feeding methods.

This is accomplished by developing and taking fullest advantage of the calf's inherent capacity to consume and digest large amounts of roughage and produce high quality protein and B complex vitamins in the rumen.

One of the major expenses on the dairy farm is the cost of producing herd replacements. Thus, the high roughage approach to calf feeding fits well into an economy that demands efficiency in production and the current trend toward high quality roughage production and utilization.

Tranquilizer Drug Fails to Soothe Chicken Nerves

Chickens with jangled nerves will have to wait a while for relief.

Scientists at Rutgers University discovered that White Leghorn chicks were as excitable as ever after they were fed a tranquilizing drug — the same compound that relieves the anxieties of humans.

White Leghorns, favored by most New Jersey poultrymen because of their excellent egg laying ability, have the disadvantage of being highly excitable. Poultrymen call them "flighty." Drs. Maclean J. Babcock and M. Wight Taylor, biochemists, reasoned that if Leghorns could be soothed with the drug they might use less feed for nervous energy and more for producing eggs.

Poultrymen will just have to keep on speaking softly to their Leghorns and warning visitors not to make loud noises, they concluded.

—Rutgers University

"Push Button" Farming Is Here

Rising farm labor costs emphasize the need for labor saving equipment . . .

Condensed from The Kentucky Farmer

Tom Swetnam

ACCORDING to information released by the United States Department of Agriculture, farmers may expect to pay higher wages for farm labor in 1957. With that fact in mind, many land owners are turning to electrical equipment to reduce labor costs or to increase the amount of production from present labor.

Let us consider briefly the possible advantages you might expect to receive from electricity in livestock and dairy farming.

Crop farming techniques have improved to a great extent over the past 40 years while labor problems connected with the barn and dairying have remained much the same on a comparative basis.

It is true that a farmer can get a little over twice the amount of milk, in about one-half the time, from the same number of cows, than his granddad did 40 years ago, but that is only part of the story.

Using the same amount of land, the farmer of today may raise 4.5 times as much wheat in 40 per cent of the time, 1000 times as much corn in 15 per cent of the time, and 5 times as many oats in 40 per cent of the time that it took a farmer in 1914.

Upon investigation, one can readily see why such striking increases in crop production have been achieved. Today's farmer plows his field in only a fraction of the time it once took him because he now has a high powered tractor at his disposal. One operation with a tandem hitched disc and harrow will complete his seedbed. Multi-row corn planters do the same job in a few hours which took a day or longer a few years ago. A motorized picker gathers the corn from the field and a power driven elevator lifts it into the crib.

Along with the motorization of farm equipment, better grades and varieties of seed and the proper employment of scientific methods of farming have greatly increased the yield of farm crops,

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at the same time reducing the required amount of labor.

Looking at these figures, it is not difficult to see that the dairy farmer's production, compared to field production, has not increased at anything near the same rate.

Advancement in the dairy farming field has been accomplished mainly through the improvement of dairy cattle breeds, the automatic milking machine, bulk milk tank coolers, and other electric equipment designed to facilitate large-scaled milk production. Better cattle breeds have increased the milk production as well as increasing the quality of milk produced. Even so, there are still serious roadblocks to the efficient and profitable production of milk.

Most of those blocks fall into one large group which may be labeled "barn chores." Feeding, barn cleaning, and the grinding and mixing of grain is done in this area much the same way in which it has been done for the past four decades.

Climbing a 50 foot silo and forking down silage for 40 or more head of cattle is no easy task, and a very time consuming one, for a man who has spent the day working in the field. An electric silo unloader will do the same thing in far less time and with much less backache.

Likewise, the barn which must be cleaned with pitchfork and broom after the milking is done uses much of the dairyman's time and prevents him from pursuing more profitable tasks. Electric barn cleaners are designed to do the job just as efficiently and may accomplish more than an hour's work in as little as ten minutes.

Taking grain to the mill requires not only the loading and unloading of the grain but also a lot of wasted time if the mill happens to be very busy on that particular day. Feed grain ground at home in the electric mill enables the farmer to grind when he wants to and as long as he wants to and eliminates the time consumed by loading and unloading and the trip to town.

In addition to saving the farmer up to two hours each day on these pieces of equipment alone, the daily cost in electricity to operate them is very small. For a herd of 40 to 60 cows, power costs per day of 5 cents for the silo unloader, 3 cents for the barn cleaner, and 3 cents for the feed mill may be expected—a total cost of about 11 cents a day.

Such pieces of equipment as these are expensive to be sure but so is a tractor expensive and so also are the seed and the fertilizers which have so greatly increased the production of the crop farmer.

New for You . . .

THE EDITORS

In Australia, an enterprising manufacturer is offering a new single package, feed-to-feedlot forage harvester. It cuts, chops, loads and unloads all kinds of forage. Should be a good idea here in America, especially for green feeding. In appearance, it looks like a frail-type chopper mounted on the front of a self-loading wagon.

A new range grass seeder has been developed by engineers at Colorado A & M College. It promises to be a big help in the fight to reclaim rangeland. Operation is similar to an ordinary seeder, except it has listers to open up the soil, leaving furrows in the field.

A new all-steel convertible hog grower is now offered by Starline Inc., Harvard, Illinois. You can first set it up as a farrowing stall. Remove half and it's a pig creep or brooder pen. With center section removed, it's a regular hog pen.

A new machine by New Holland Machine Company, New Holland, Pennsylvania, is a combination crusher - mower. Its smooth rollers are said to condition hay so thoroughly that it drys in *half the time.*

For their hay conditioner, John Deere (Moline, Illinois) now offers a new hook-up and drive so it can be pulled behind their center-mounted mowers. One man, one tractor and one quick trip over the field cuts and conditions the hay. It connects and discounts easily, they say, so you can use the mower without the hay conditioner.

If you are interestel in steel farm buildings, write to Stran-Steel Corporation, Detroit 29, Michigan, and ask for their new catalog. It illustrates and describes buildings for farm shop, machinery storage, grain-drying and storage, etc.

Ever wonder what good a roof on a wire crib did after the corn settled and the sides were open to wind and weather. Now, Pennington Manufacturing Company of Addison, Illinois, supplies a 32" band of steel to fit around the crib under the eaves. They figure a full crib will settle only about the width of the band.

If you want to get power steering on your tractor now, write to Yetter Manufacturing Company, Colchester, Illinois. Their new unit mounts on the steering shaft and uses the regular hydraulic

system. They say it doesn't affect manual steering, but you will think you have two flat front tires if you turn it off.

If you have the job of getting forage out of a trench or bunker silo, a new machine introduced by Sunflower Industries, Olathe, Kansas, will sound good to you. It backs up to the forage wall, cuts it out and blows it into your wagon or truck. Can be mounted on your tractor or on wheels but is tractor powered.

A new four-bottom plow dodges its own stones. Made with spring-trip beams, individual bottoms can swing out of the way when an obstruction is hit. The plow can be converted to three bottoms simply by removing 4 bolts. Made by International Harvester, 180 N. Michigan, Chicago 1, Illinois.

A Farmer's Prayer

By Samuel R. Guard, Editor of Breeder's Gazette

Lord God in High Heaven, the Same Who Listed Seven Times to Thy man on Carmel — himself cast down upon the earth, his face between his knees, until a little cloud did rise out of the sea like a man's hand —

We too, and humbly, pray now for the sound of abundant rain. Lord have mercy and give us in this April, showers aplenty.

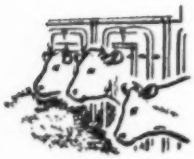
We've seen the grass wither, the flower fade, the rice shatter, the apple fall, the proud plume on cornstalk break, even a stone rolled unto the door of the sepulcher — and still we believe.

Indeed, we know that they will green again, grow again, beat again, live again.

Alleluia!

Amen.

Herd Thrives on One to 20 Grain - Milk Ratio



How a New Hampshire farmer cuts feed costs.

Condensed from American Agriculturist

WHEN you're learning — to drive a car, fly an airplane, play ball or what have you —the instructor tells you to "think ahead."

Roe McDanolds whose pasture program firmly clinched the second place in the New England Green Pastures Contest this year isn't a beginner by any means. But he farms by thinking ahead of his farm—farms with his head and with his heart.

No "Johnny-come-lately," McDanolds, after more than 25 years on this 106 - tillable - acre dairy farm still admits to getting "excited" about growing forage and the possibilities a quality home-grown feed has for his cows.

He's made other agriculturists excited about his program, too. During the war years, the Production and Marketing Administration took a close look at his methods. The visitors didn't have to dig too deeply to discover that Roe's grain-milk ratio was the nugget in his haypile.

He is putting out milk at the rate of 20 pounds to each pound of grain fed—with the help of his son, Richard who handles the field crop operations while Roe tends the chores.

Together, with only a little help during haying time, they produce 160,000 pounds per man from their 30-milker herd with the Holsteins cooperating to the tune of 11,500 pounds per cow. Young stock number 23.

Roe isn't satisfied with just the forage he can make around his place. His back pasture, several miles away, is used for young stock and dry cows and contains 33 acres of pasture, 25 of which have been cleared from rough, rocky and hilly terrain which has been used continually from nearly as far back as Colonial times.

Using a heavy drag constructed from sections of discarded railroad rails, McDanolds, after bulldozing out the movable rocks, stemmed the inroads of thistles and other undesirable weeds. Then on went 400 pounds per acre of 8-16-16, some $345 worth.

Reprinted by permission from American Agriculturist, Ithaca, New York

Limed and seeded, this steep, once forbidding slope produces some of the nicest ladino clover and domestic rye grass and timothy that you'll see, thanks to careful attention and its rich, heavy soil.

A nearby farm has been taken over by the McDanolds team. Here they turn out some of the most toothsome rye grass, hay mixed with Vernal alfalfa and ladino the Green Pastures judges have set their eyes on. A cutting made early in September produced 218 bales of the blue-ribbon feed from 2½ acres. It runs between 40 and 50 pounds a bale, is fragrant, sweet and succulent.

This with the 468 bales of rowen timothy and blue grass taken from 5½ acres and 270 tons of grass silage put up last spring swell the lofts and silos against the winter. The silage is fed with 30 pounds of molasses to the ton. The silage went in in June and haying began as that month closed. Forty per cent of winter-fed hay is second cutting. Oats is used as a nurse crop.

McDanolds estimates that his cows start getting their winter feed in the barn about November 10 each year. Last year, so large was his supply, 500 bales were left over. Last year the cows were turned out May 17; usually it's earlier.

Green Pastures judges feel that the distinguishing points in this farmer's management are the amounts and analyses of fertilizer used. They're just about what the doctor ordered—liberal applications of 8-16-16 and 10-10-10 which Roe mixes himself. And a 24 by 50-foot roofed manure pit, which has recently been expanded, adds a big boost in the form of organic matter. The structure's cement floor is sloped so the spreader can be driven down into the supply, filled and pulled out with ease even in bad weather.

Going onto the land with the fertilizer is a yearly application of cobalt sulfate and a one to 60 application of a mineral supplement which the Green Pastures winner feels keeps his cows up to tick while they're fed on the low grain diet.

The Holsteins get fat on the ration long on forage, short on grain. Even the dry cows are plump. McDanolds says that any selective breeding he does which may help his herd prosper on the green feed is "mostly unconscious."

The black and whites love their owner. They herd around him on pasture; they know he knows what they like and sees that they get it.

Water supply gets close attention. McDanolds has large wooden drinking tubs in convenient locations throughout his pastures. A 4,700-foot stream-control wa-

ter diversion has just been completed. It has converted several acres of poorly drained land into more fodder for the McDanolds forage mill.

Unusual in this area is his practice of rotating two pieces of pasture at the same time. Roe considers it an ace in the hole in his plan of work. The cows feed on fresh and semi-fresh areas at the same time. They thus clean up the old pasture well while getting plenty of fresh food from a newly available area. This method at once eliminates close cropping and waste.

Roe is proud that farmers in his area haven't allowed a vacant farm to remain idle. Either a new owner takes over an abandoned place or the land is absorbed by another dairyman for use by his own herd. This forage-maker takes as much pride in the accomplishments of his neighbors as in his own and, if you visit him, chances are he'll tell you what a fine job this or another neighbor is doing on his place.

All rotation pastures are clipped in late summer and new growth is available in September and late October, even up until early in November. McDanolds feels he's lucky because 1956 brought him a goodly supply of moisture while much of New Hampshire went dry.

Roe notes that 30 acres are in ladino and 76 in mixed grasses and 125 tons of hay are put up. Thirty tons of commercial fertilizer, 37 tons of lime and three tons of superphosphate went onto the fields this year.

As Green Pastures fans have been pointing out for 10 years, there's a savings in raising big crops of fine forage, even though the fertilizer bill may mount a bit.

After all, cutting grain costs is a top priority goal of the program.

It Pays to be Practical

Socialism — You have two cows and give one to your neighbor.

Communism — You have two cows. The government takes both and sells you the milk if there is any.

Nazism — You have two cows. The government takes both and shoots you.

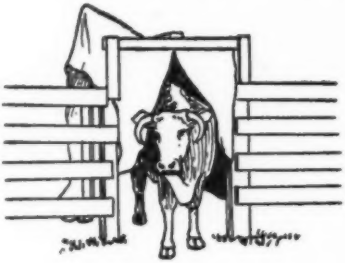
New Idealism — You have two cows. The government takes both, shoots one, milks the other and throws the milk away.

Capitalism — You have two cows. You can sell one and buy a bull.

Practicalism — You have one cow and one bull. You sell the bull and buy two heifers and breed all three by artificial breeding.

—*COBA News*

Let Cows Control Flies This Summer



New self-treating devices for livestock insect control prove highly effective in Pennsylvania tests . . .

Condensed from
Science for the Farmer

Tien-Hsi Cheng, Associate Professor

THE CONTROL of biting flies on cattle poses a serious problem to farmers. Horn flies alone have been found to reduce milk production from 10 to 20 per cent. When large populations of horn flies are reduced, weight gains of beef cattle increase by 42 to 70 pounds per animal in 2 to 3 months. A simple, economical, time-saving device for treating animals will appeal to most livestock owners.

Tests made in the summer of 1955 at the Pennsylvania Experiment Station dealt primarily with the control of horn flies and stable flies. Two self-treating devices were used—a cable type rubber and a treadle sprayer. F-21 livestock spray containing butoxypolypropylene glycol, methoxychlor, methylated napthalenes and petroleum distillate, was employed in both cases to compare the effectiveness of the two methods.

Over 120 head of cattle, mostly Holsteins, were used in the tests. They were divided into three groups, one in a pasture containing a rubbing unit, one group with no insect control, and a third group to test the residual effect.

Cable Type Rubber

The cable type rubber or scratcher was used to take advantage of the well-known habit that cattle have of rubbing on trees, fences and posts. This device was made of a log chain, barbed wire, and several burlap sacks. When ready for use, the burlap was soaked with F-21 livestock spray, the initial application using about one gallon. At 2 to 3 week intervals, it was retreated with 2 quarts of the material. The unit was covered with a sheet of plastic material on most rainy days—or re-soaked with the material after a heavy rain.

The device was built for less than $10 and the cost of operation averaged several cents per

Reprinted from Science for the Farmer, Pennsylvania State University, University Park, Pa.

head of cattle for the entire season. Sometimes the animals fought to get to the device to rub their heads, necks, sides and bellies.

The cable-type rubber reduced horn fly population by more than 99 per cent from July to the end of September. Stable flies were reduced by 70 per cent.

Treadle Sprayer

The major parts of a treadle sprayer were a treadle covered with metal netting, a pump, and two nozzles each connected to a glass jar containing the spray. When an animal stepped on the treadle, it automatically operated the pump and a measured amount of liquid was ejected from each nozzle. The chute was covered on the top and two sides with canvas to help confine the spray mist. Each animal had to make a round trip through the chute to be sprayed on both sides.

Upon the death of a person whose work was covered by Social Security, some member of his family should inquire promptly at the nearest Social Security office to find out if survivor's insurance benefits are payable.

With the treadle sprayer the reduction of horn flies ranged from 93 per cent within 1 to 3 hours to 83 per cent within 5 to 7 hours. The reduction of stable fly population ranged from 56 per cent within 1 to 3 hours to 12 per cent within 5 to 7 hours.

The rubber had the advantage over the treadle sprayer in giving more lasting residue effect. This was true for both horn and stable flies. Daily fly counts were made to determine the residue effect. Reduction of horn fly population ranged from over 99 per cent in the first 5 days to over 50 per cent after 21-25 days. The residue effect of the material *on* stable flies was less; the reduction varied from 71 per cent in the first 5 days after treatment to 54 per cent after 11-15 days. Beyond this no significant reduction was noted.

Judging from the results so far, the rubbing device gave practically complete control of horn flies but only partial control of stable flies. The fact that the animals were rarely seen rubbing their legs on the device might account for the less satisfactory control. Stable flies were found to feed mainly on the legs.

Choice of Location

To obtain best results, there should be one rubbing device for about 25 animals, placed in a pasture of not more than a few acres with few trees or other objects to compete with the device. Place the device near a feed rack, salt lick or wherever the cattle loaf or gather.

Tests on the treadle sprayer

indicated that one of the difficulties was the excitement and nervousness of the animals. Even after two weeks of training, some animals jumped as they passed through the sprayer and some stepped on the treadle before the one ahead stepped off, thus interfering with the proper operation of the sprayer. Results of more than 50 tests showed that only two-thirds of the animals passing through the sprayer got full treatment (2 squirts from each nozzle), while most of the remainder received half treatment and a small number received no treatment.

The self-treated animals showed no sign of skin irritation nor did they appear to be disturbed in any way. Occasionally they licked the treated burlap but no adverse effect was noted. The material was not irritating to humans.

It is clear that the cable type rubber can not altogether take the place of an efficient sprayer. Research is now in progress to improve self-treating sprayers to make them more effective and economical for the control of livestock insects.

Rations For Brood Sows

Two years of research at Purdue University has shown that corn silage can be fed with satisfactory results to brood sows during gestation.

Feeding of good quality corn silage, 1.5 pounds of a high quality protein supplement and minerals free choice resulted in a 20 per cent reduction in feed costs, an increase of 1.4 to 2.0 more pigs per sow at farrowing, and an increase of 0.3 to 1.3 more pigs per litter at weaning.

Hog farmers will be interested in results of this and other studies conducted by swine nutrition specialists at Purdue on rations for brood sows.

Now available are mimeos A.H. 151, "Corn Silage as a Feed For Brood Sows;" A.H. 152, "Self Feeding Rations Containing Ground Corn Cobs for Bred Gilts;" A.H. 180, "Amount of Protein Supplement Required for Sows Fed on Corn Silage During Gestation;" and A.H. 181, "A Comparison of Ground Corn Cobs and Alfalfa Meal for Self-Feeding Bred Gilts." Write to the Agricultural Publications Office, Purdue University, Lafayette, Indiana.

—Indiana Extension

Going To Buy A Farm?

You can save money by learning how to appraise farm buildings . . .

Condensed from The Young Farmer

David Carew, University of Wisconsin

IN FRONTIER days a young couple could homestead on a quarter section with only a log cabin and a lean-to for the cow and horse. Building materials were growing right at hand, and neighbors were glad to exchange labor and finish up the barn raising with a supper and square dance.

In the Midwest nowadays the farm buildings make up over half the value of the farm business, according to S. A. Witzel, farm building specialist at the University of Wisconsin. Today the young farmer's "building sense" can make or break him.

The farm you have your eye on may have a fertile, gently rolling silt loam soil; you may almost be able to see the long rows of corn marching across the land. But the picture isn't complete unless you also see yourself cleaning the barn, filling the silo, and milking the cows. You are going to spend a lot of time working in these buildings if you buy the place, so take a little time beforehand to figure out how you'll get along together and what they're worth to you.

Witzel has a few yardsticks with which to figure the value of farm buildings. Each building must be appraised separately with these tools.

Start by estimating how old the building is, how much longer it will last, and what it would cost to build it now. Then multiply the *new cost* by the *present age* and divide it by the *probable life remaining*. Subtract the cost of any necessary repairs from this answer and you have the true value of the building.

Let's start with the machine shed, for an example. We decide it is about five years old, should last another ten years and would cost $6,000 to build now. Multiplying the new cost ($6,000) by 5 years (the present age), we get $30,000. This figure divided by 10 years (the probable remaining life) gives us $3,000. But we notice that the tin roof needs paint and there are a few loose boards along one side. So we subtract $200 for re-

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pairs and wind up with a final value of $2,800 for the building.

Handle each building the same way to get the total worth of all the farm buildings. Witzel says this figure shouldn't be larger than 55 per cent of the price asked for the farm. If it is much larger it shows that there are probably more buildings than the farm business really requires, and you'd be paying for something you don't need. On the other hand if it's much below 55 per cent, chances are you haven't enough buildings to do the job. Unless you're getting quite a bargain, be cautious.

Most young farmers will be able to use a little help on this appraisal business.

Local banks ordinarily have an appraiser who works with them in deciding how large a mortgage to give on a farm or business. The few dollars he'll charge may save you many thousands of dollars repairing hidden defects later on. Besides he'll probably let you make the rounds with him, and at the same time you can pick up a few tips on the important things to look for.

Repairs are a very flexible item. A young fellow who's handy with tools and has spent a little time working with builders can do a lot of repair jobs for half the cost of hiring them done. Of course he'll have to deside if he's going to have time to spare for these jobs and run the farm at the same time.

The cost of starting farming on your own gets higher every day it seems. Some folks starting out may feel that they can only afford a run-down farm with worn out buildings, that can be built up during the years. Witzel warns that this often is not the easy way out of the situation.

Unless the beginning owner is very careful, he may find himself pledged to pay too much of his income on the mortgage. He won't have enough, after he pays his family's living expenses, to do any improving on the place. He can find himself in the same old rut a few years from now, plodding along from day to day with no chance of improving his working or living conditions.

Let's take the case of an imaginary young fellow, Joe Smith. He gets out of the Army, marries his high school "best girl," and goes into farming for himself. It takes most of the money he's saved to make the down payment on a 160-acre dairy farm and pick up a few things to start housekeeping and farming. He also manages to rent a piece of land across the road on shares. He plans on raising cash crops over there to keep his machinery busy and give him a larger cash income.

Joe picks a farm which has

good soil but needs some fertilizer and lime to produce bumper crops. It has a fair set of buildings, soundly constructed but needing a lot of minor repairs to keep them from running down completely, or remodeling to make them more efficient.

Some finance organizations may want him to pledge half his milk check each month as a payment on the loan. Joe figures that his milk check will run around $500 a month. At first glance it seems like $250 a month will be enough for him to get along on.

But Joe is overlooking a few things. Out of his share of the check he's going to have to buy food for his family, feed for the livestock, and gasoline for the tractor and car. That doesn't leave him much for alfalfa seed or fertilizer, much less for lumber and cement with which to repair his buildings.

He's better off, in fact, extending his loan a little longer and paying only about one third of his check. This gives him some money to work with. He's starting with a fair chance for success, not with the cards stacked against him.

This working capital invested in buildings, land, and livestock improvements will make him more money and he'll wind up paying off his loan faster than if he had made the original larger payments. His farm operation becomes more efficient and he has a getter place to work and live. What's more it will actually belong to him sooner.

To keep his head above water, this young farmer has to figure out every move before he makes it, Witzel says. He can't afford to put money in the wrong improvements, because this puts needed improvements off until they're more expensive than ever.

He'll just have to figure out which improvements will pay off in added income or are immediately necessary to prevent further damage.

For instance after Joe Smith has been on the place for a few months the needed repairs are quite apparent to him. For one thing the dairy barn is arranged very unhandily. He needs a shed for his young stock and bedding storage. The old fashioned water-pump and the water storage tank in the hay mow just can't be depended upon to take care of his water needs.

Here is another place where he can use some expert advice. He can get it at little or no cost. The county agent can advise him on experiences of other farmers and supply plans and diagrams for building or remodeling. Agricultural colleges have extension experts in farm buildings on call throughout the state. Some lumber and equipment companies

have experts on their payrolls who can give him a few tips on repairs.

Joe decides to start by remodeling the dairy barn. He's attracted by the idea of a loose housing barn with milking parlor, but he knows he just can't spare the money for several years. He can widen the feeding alleys though, increase the length and width of the stalls, and install a barn cleaner. Because there's no longer any need to drive the spreader through the barn, the added length of the stalls can be taken out of the center alley, taken out of the center alley.

If Joe salvages his old stanchions and just moves them farther apart, the job won't be too expensive. By doing the cement work on the gutters himself he can cut the cost of the job down still more.

After remodeling, Joe finds that his cows are cleaner and easier to milk and care for. They also have fewer udder or leg injuries. He can use a feeding cart in his new wide feeding alleys. He can milk more cows and still spend less time doing chores around the barn.

He's planning on building up his herd by raising a lot of young stock. Next on his list of improvements is a shed to house them. He finds that the newest idea in shed construction is the prefabricated steel type. These sheds can be purchased with a small down payment. They are considered as movable items rather than real estate improvements so the financing terms are more liberal.

But Joe decides on a pole type shed. He has a lot of material around the farm for building and he can always make more room by building on another section when he needs it.

This brings our young farmer to the last item on his list, a water system.

During those first years, some young folks may overlook one of the most important buildings on the farm, Witzel says. That's the farm home. Even though beginning farmers are watching every penny, it's the time in their lives when they really need a good home. The children are young and demanding and life will seem easier for the young couple if they have a pleasant home to relax in after a long, hard day's work.

Insulation will make the house warmer in winter and cooler in summer. The decrease in winter heating costs after insulation will help to pay the cost of this improvement.

Plans are available through the county agent's office for remodeling the kitchen and other rooms in the farm home to make them easier to work in and more comfortable to live in.

How Good Is Your Planting Seed?

Results of drill-box surveys give meaning to the Biblical phrase: whatever a man sows, that also will he reap . . .

Condensed from Crops & Soils

ARE YOU letting profits slip through a hole in your pocket that you didn't know was there? Maybe you are unless you've taken a good look at the seed you use.

For years we have been told to use good seed, but no one has given much thought to that advice. Indeed, no one seemed to know just what kind and quality of seed the farmer was using. After all, few farmers had crop failures because they used poor seed. And the weeds that kept cropping up probably blew in from the neighbors—at least you seldom blamed it on the seed.

Then not long ago someone thought we should find out just how good or poor the seed was that farmers were using. Crop Improvement Associations — the seed certification groups—in several states started "drill box surveys." In most cases, crop improvement officials, county agents, or "vo-ag" groups went right out in the field at planting time and took a sample of seed from the drill, seeder, or planter. The samples weren't taken from selected growers, but from farmers who just happened to be in the field. They were not notified in advance.

A few important questions were asked about the seed, and the samples were brought back to seed laboratories for testing. Now the reports are coming from 20 or more states, some with surveys from the past five years.

Before talking about the survey results, we need to know what good seed is.

In simple terms, it is seed of a recommended unmixed variety, is free from trash and weed seed, and has a high percentage of strong healthy sprouts. Seed treating for disease protection is a recommended practice, but not a measure of seed quality. It makes good seed better, but does little for poor seed. Likewise, smooth, shiny, plump seeds look good, but they aren't *really* good

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unless they have high germination.

With this definition in mind, let's look at some of the samples from Mr. Average Farmer's drill box.

The Nebraska Crop Improvement Association and other state agencies have conducted surveys with wheat and oats since 1951. Seed samples were taken from nearly 2,000 farmers in 20 counties.

Over 90 per cent of the farmers were using their own homegrown seed or seed bought from a neighbor. Notably, 80 per cent were using recommended varieties. The samples were not examined for varietal mixture, but in one county 10 per cent of the farmers did not know what variety they were using.

More than half of the farmers planted seed just as it came from the combine without further cleaning. Consequently, seed samples contained as high as 11,700 weed seeds of various kinds per pound of grain. At the usual seeding rate, that is about 25 weed seeds per square foot.

The average weed seed content was about 150 weed seeds per pound—still well above good seed standards. Most state Crop Improvement standards allow less than 15 common weed seeds per pound. In most cases, cleaning the seed reduced the weed content by 75 per cent, but in some counties, excessive weed seed still remained after poor cleaning.

Germination percentages were generally high, although they vary from year to year depending on weather and harvest conditions. Most farmers were planting seed which germinated 90 per cent or better, but the range was from 5 per cent to 98 per cent. In some counties only 25 per cent of the farmers had tested their seed to know how good or poor it was.

Samples of certified seed ranked at the top of the list in every case.

Less extensive studies in Iowa tell the same story. About 165 farms, 6,884 acres, were sampled in 12 central Iowa counties in two years. Only oat samples were taken. Again, most farmers were using their own seed or seed from a neighbor. Over 90 per cent in both years used recommended varieties, but half of the samples in 1956 were mixed with 1 to 25 per cent of other varieties. About 60 per cent of the samples were cleaner, less than 30 per cent were tested, and only 20 per cent were treated, despite the fact that treated seed has shown a 3-bushel advantage in Iowa tests.

Only 35 per cent of the samples met Iowa Crop Improvement Association standards of varietal mixture, purity and germination

for good seed. And the survey showed little difference between home-grown or purchased seed. Only 38 per cent of the samples of seed which were purchased met good seed standards. All of the certified samples were high in seed quality.

North Dakota Seed Certification Department had local agricultural teachers get samples of flax from drill boxes throughout the state. They found seven per cent of the farmers had no idea what variety they were using, and 30 per cent gave the wrong name. Uncleaned samples averaged 3,450 weed seeds per pound. Home-cleaned seed averaged 711 weed seeds per pound; seeds cleaned at the elevator averaged 670; and seed cleaned at state inspected cleaning plants averaged 58 weeds per pound. Sixty per cent of the samples contained prohibitive or restrictive noxious weeds.

Oak trees are said to have 300 years of growth, 300 years of maturity and 300 years of "old age."

Other surveys with wheat in North Dakota showed similar conditions. In 1956, 742 samples were taken. Sixteen per cent of the farmers were using certified seed. Seed cleaned at the elevator or at home averaged over 125 more weed seeds per pound than seed cleaned in an approved processing plant. Eighty-five per cent of the samples contained noxious weeds. Only 46 per cent of the farmers had their seed tested and knew what the germination was.

We could go on, but we would only be repeating ourselves. That is the striking thing about these surveys. They all tell the same story—use of poor seed is one leak in farm profits which is going unchecked.

In Wisconsin, 74 per cent of the samples were unsatisfactory. In Michigan, 56 per cent had excessive weed seed.

And it even goes farther than the United States. The Canadian Seed Growers Association found that for wheat, oats, and barley, 43, 76, and 67 per cent of the farmers were using unsuitable seed in Western Canada. Twenty per cent of the farmers did not know what variety of oats they were using. In Eastern Canada they found that 65 per cent of the seed lots prepared on the farm were unsatisfactory.

Missouri noted that farmers' own seed can be good but is often poorly cleaned. Ohio surveys showed that counties with active seed improvement programs most often were using good seed. In Washington, only 1 per cent of the samples were weed-free.

W. G. Stewart of the Colorado Seed Growers Ass'n sums it up like this: "Our biggest problem

is to make the farmer aware of the *value* of seed quality."

The University of Saskatchewan estimates that the average farmer loses $1,000 a year due to weeds, and notes that clean seed will cut this loss.

Summarizing all the surveys, a few problems are obvious. For wheat, oats, barley, flax, and soybeans, most farmers use their own seed or seed they get from a neighbor. This makes seed quality a neighborhood project, and there are shining examples of what can be done. In Cheyenne County, Nebraska, 81 per cent of the farmers cleaned their seed and 71 per cent treated their seed.

New recommended varieties are generally widely accepted. But not enough farmers really know what kind of seed they are using. It is quite clear that most seed is not thoroughly cleaned.

Treating is not a standard practice even in states where it is recommended. Only a small percentage of the seed is tested. Since there is no way to predict how seed will germinate by looking at it, testing becomes almost a necessity. Iowa had a good example of this. One farmer used a recommended variety; he cleaned his seed, treated it, and drilled it in a well-worked seedbed. But he didn't test it. It germinated only 48 per cent in the laboratory. Testing would would have saved him a lot of money and convinced him to buy better seed.

There are exceptions to these general rules. Hybrid corn seed is generally very good. Most farmers buy from established companies and producers. Nebraska tests indicate that field germination of some hybrid corn seed is not always good despite the high results reported on the tag. This is a separate problem however, and the best you can do is trust a reliable company or grower.

Another exception is high quality legume seed from the Western states. In most cases these are certified lots of seed. In a Wisconsin survey, all such samples rated high in seed quality.

Since education programs plugging good seed have been underway for 20 or 30 years, why is the picture so dismal? The answers are not obvious. Losses from poor seed are seldom glaring, and sometimes you don't feel them right away; you blame them on weather, insects, or disease. So it is not easy to work up a lot of enthusiasm for using good seed. And new improved varieties with their high-powered yields have tended to cover up the losses from poor seed.

Then, too, the weed problem has become so widespread that farmers may not be as concerned about weeds as they once were. An underlying factor here may

be the increased use of sprays and machinery as control measures for weeds.

The mistaken idea that it isn't necessary to clean or process home-grown seed is probably another reason for the use of poor home-grown seed.

Now the question is: what can we do about the problem? What you do, as a farmer, depends on whether you use your own seed, or buy seed.

If you are using your own seed, are you convinced that that is the best thing to do? The following questions should help you decide:

(1) Are there better varieties than mine? Your county agent can answer that. He has performance records on all common varieties.

(2) Is my seed mixed with inferior or unknown varieties? If you notice some tall or irregular plants at harvest time, or if you can see off-type or colored seed kernels in a handful of seed, it's probably time to buy new seed.

(3) Can I clean my seed without too much expense? To find out, send a representative sample of seed to the state seed laboratory. They will tell you what is in your seed. Then talk to a local seed cleaning plant or try cleaning a small sample yourself. However, it is not easy to clean quack grass out of oats or other small grain, for example, and "do it yourself" may not be worth a try.

(4) Does my seed germinate well? Shoot for 90 per cent. Have a sample tested. The state lab will probably give you this information from the same sample sent in for purity tests. Agriculture teachers and county agents will do the best they can with their facilities, but remember they are not as trained or experienced as the official seed analyst, and germination tests are ticklish business.

Of 14,200 persons killed in on-the-job accidents in all industries in 1955, about 3,700 were killed in farm work.

If your own seed passes all of these tests, there is no reason why you should not use it. Certification officials have found that most farmers should start with new seed every two or three years unless they take special precautions to prevent mixture, weeds, and low germination.

If you buy seed, above all insist on a tag or label stating the variety, purity, and germination as found by an official seed laboratory. And buy from a dependable dealer. Certified seed, too, is always a good bet.

As one farmer put it when he was surveyed, "You can hardly expect a crop of tulips if you use onions for seed." That is the story in a nutshell.

Soilage or Rotational Grazing?

Here's a comparison including facts and figures you can use to decide whether you want to haul pasture to your cows . . .

Condensed from
Minnesota Farm & Home Science

Thor W. Gullickson and *Clifford L. Wilcox*

IT TAKES fewer acres of pasture, generally, to feed a dairy herd when crop is cut and fed green as soilage than when cows graze the pasture.

Cows fed according to the soilage or zero-grazing plan seldom produce any more milk than when on pasture, but frequently the cost of milk production will be higher because hauling pasture to cows involves more labor and equipment.

Compared to the soilage plan, a well-managed rotational grazing program is relatively simple and easy to operate. Also, since the cows "harvest" the crop, labor and equipment needs are cut to a minimum.

These are among the more important conclusions drawn from experiments, comparing the daily rotational plan with the soiling or zero-grazing pasture plan. These were conducted by the University of Minnesota.

The Experiments

In 1953, the work involved several different crops — alfalfa-bromegrass, orchard grass, ladino clover, oats, and Sudangrass. Each field of each crop was divided into two parts, one for grazing and the other for soilage, with 35 cows in each group. Milk production was the same for both groups. However, it took only 30.6 acres to produce the forage for the herd fed soilage as compared with 50.9 acres for the herd on pasture. The greater wastage of forage from trampling by cows on pasture apparently caused the difference.

In 1954, only an alfalfa-brome grass mixture was used. Since this crop never grew over 16 inches high, wastage was about the same on both plots. Consequently there was no difference between them in acreage needed to feed each group. Both groups also produced about the same

Reprinted from Minnesota Farm and Home Science

amount of milk.

In 1955, crops that had been found to be most suitable for use in each system were used.

A milking herd of about 50 purebred Holstein cows was divided into two equal and similar groups. One was fed soilage; the other was turned out to graze.

Both groups were on experiment from May 16 to August 31, excepting from July 6 through 17. At this time neither suitable pasture nor soilage was available due to a severe seasonal drouth. Both groups were then fed similar rations.

Pasture for the grazing groups consisted of a mixture of alfalfa, bromegrass, orchard grass, and red clover. Alfalfa and bromegrass were predominant, but the percentage of each varied throughout the area.

The soilage group received an alfalfa-bromegrass mixture from May 16, when it was about 14 inches tall, until June 16; oats from June 16, when they were ready to cut and were about 36 inches tall, to July 6; and Sudangrass from July 16, when it was at least 18 inches tall, to August 31. Later some of the Sudangrass reached a height of five feet.

All cows were milked regularly twice daily and records kept of their production. In addition, records show that there was no significant difference between the groups in the fat content of milk.

Results — Weight Changes

Each cow in both groups was weighed at the start, on the first of each month, and on the last day of the experiment. There was no significant change in weight for either group. The group on pasture weighed 1,266 pounds at the beginning, went up to 1,313 pounds on July 1 and ended at 1,267. The group on soilage started at 1,280 pounds went to 1,283 by July 1, and ended at 1,256 pounds.

Feeding Time

Cows in the pasture group were given access to an area of new forage daily. An electric fence was shifted once daily, usually in the evening at milking time. It took about 15 minutes to go to the pasture and move the fence. After each plot was grazed, the area was clipped to remove the uneaten material.

Cows on soilage were fed half-inch chopped green forage daily. The hay was chopped with a direct-cut forage harvester, drawn by a 3-4 plow tractor. It was blown directly into a self-unloading forage wagon, and then mechanically unloaded into six feed bunks in the feed lot. All this took approximately 40 minutes daily when there were no breakdowns.

Pocket gopher mounds sometimes clogged the cutter bar and fouled the conveyor. Sudangrass

over three feet tall also caused some trouble. Occasionally, following heavy rains, the oats and Sudangrass fields were too soft to support the heavy equipment.

Each load of forage was weighed, and its dry matter content determined soon after it was cut. Likewise the amount and dry matter content of the forage refused was measured daily. Each cow ate anywhere from 100 to 230 pounds of fresh forage daily. The dry matter likewise varied widely, depending chiefly on the stage of maturity of the crop.

"Since you get your milk bill separately, it stands out like a sore thumb," says a Cornell University economist. He predicts "very little home delivery in the future years. Almost all milk will be sold in food stores and this will increase the sale because more milk will be bought if it is included with grocery items."

Harvesting, either as soilage or by grazing, usually was started along one side of the plot and each day moved toward the other side. When the regrowth on the areas first harvested reached the desired stage, the operation was repeated. The crop not used in this way on any plot was cut and made into hay or silage. A total of 10.4 tons of such hay was obtained from the pasture plots. No portion of the crop on the soilage area was cut for hay. The pasture area was grazed over approximately two and one-half times during the season, and most of the Sudan crop was cut twice. The second cutting, however, was inferior in quality because of heavy infestation with pigeon grass.

Hay Consumption

Hay was always available in limited amounts to cows in both groups, and each cow was fed one pound of grain per six pounds of milk produced daily. Cows on pasture ate 3,543 pounds more hay during the season than those fed soilage (a total of 17,256 pounds against 13,713 pounds). One partial explanation for this is that during the hottest, most humid days of the summer, cows preferred to stand and eat rather than go out and graze. The soilage group had the advantage in being confined in a shady woodlot.

Besides the hay, cows on pasture were fed 7,695 pounds of soilage from July 1 to 5 when, due to the drouth, the pasture did not fully satisfy their needs. There is a credit of 10.4 tons of hay harvested from the pasture area.

Milk Production

There was little to choose between the groups in total milk production during the three years. However, it took considerably

more land to produce the forage needed for the pasture group than for the soilage-fed group in 1955 (and in 1953, too). In 1954, both groups required approximately the same number of acres, but both groups were fed comparatively short alfalfa-bromegrass forage throughout the season. This suggests that little is gained by utilizing short-growing crops in the form of soilage rather than grazing them.

Wastage

This generally is higher when a crop is pastured than when it is cut and fed as soilage. The difference, however, is very small except with dense, tall-growing crops. Here 50 per cent or even more may be destroyed by trampling and by fouling with manure and urine.

On the other hand, wastage of forage when fed as soilage seldom exceeded 12 per cent. Wastage was quite negligible, except when fermentation and heating of the forage left in bunkers overnight caused it to become unpalatable. Other factors affecting consumption were the weather, flies, and stage of maturity of crop.

As crops became more mature, both groups tended to eat less of them.

Feeding Value of Forages

Different forage crops not only differ in feeding value but also may have a different value when used for pasture than when fed as soilage.

Cows generally did well when on oats and Sudangrass pastures, but did even better when these crops were fed as soilage. Both groups preferred both of these crops over alfalfa-bromegrass, and young plants over those more mature. Ladino clover was perhaps the most palatable crop for both pasture and soilage.

The greatest advantage of the soiling system over the grazing plan is that it takes fewer acres. This occurs only when tall-growing crops are utilized. Yields per acre of short palatable crops are not increased by feeding them as soilage.

For use as soilage, most crops should be harvested at the early hay stage instead of at the height most desirable for grazing, which is somewhat lower. Feeding of a crop as soilage, therefore, generally cannot be started until at least a week after it is ready to be pastured.

Costs of Operating

Differences in costs between the two systems with herds of 25 cows each are so small that the influence of even one of the many varying factors may easily tip the balance in either direction. Cost figures per unit probably will be higher with a smaller herd, lower for a larger one.

Farm Bookkeeping

Keeping records and accounts is the farm manager's No. 1 problem. There are a few shortcuts . . .

Condensed from Farm Management

Marilyn Lovett

WANT to know if your farm is making or losing money? Want to be sure that new piece of equipment is worth the cost? Want to avoid paying more taxes than you owe?

The answer to these questions and countless others facing farm managers daily is, of course, emphatically "yes." Yet are you sure your year-end net shouldn't be written in red ink rather than black? Are you certain Uncle Sam isn't collecting more than his share from your pocket?

If complete, accurate farm records are part of your management practices, then you can answer the above questions confidently and accurately. But if you're a haphazard "folder of bills, checkbook and bank statement" type bookkeeper you'd better keep reading while we "talk turkey" about farm bookkeeping and accounting. Because, considering the nature of today's larger farms, the modern farmer has many more decisions to make in the course of a year than what to plant in the north 40. Good records are an essential guide to wise money-making decisions.

Decision-making Information

Judgment is the product of native intelligence plus experience in using it, and no piece of paper will supply either. But a decision is the product of judgment plus information, and farm records and accounts are a valuable source of information.

Taxes are another reason why you should keep records of expenses and income. You can't afford not to report all your farm expenses as deductions from your income. Expenses not reported through oversight or denied because they're unsupported, cost you an average of 22c on the dollar. If you're in a higher bracket, they cost much more.

There's no doubt about it! Keeping farm records the way everyone—including the tax collector—says you should is any-

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thing but a pleasant pastime. That's the main reason most farmers don't make good bookkeepers: They don't have the time or inclination to do the job at the time when regular accounting methods require it to be done. You just can't be expected to drop everything, run home and make an entry every time you spend a dime or collect a dollar.

Benefits from Your Records

Let's consider what benefits may be obtained from the information provided by a set of financial records, organized into an accounting system.

An elementary benefit is determining whether your farm makes a profit or a loss during any given period. There are a number of reasons why your cash balance doesn't show this most important fact. A farm often contributes substantially to living expenses by providing shelter and food, which ought to be recognized as items on the credit side of the balance sheet.

Every year a certain amount of current income will be spent on items like equipment which are a part of productive facilities and hence add to income over a period of several years. It would give a false picture of net income to charge the entire cost of a tractor to a single year. An annual depreciation charge gives a clearer picture of the cost. And very often there are items produced in one year which may not be sold until the next. By the same token, certain expenses incurred in one year will not be paid until the next.

Example Cited

Suppose you are raising sugar beets or cotton with a considerable amount of hand labor. Anyone will recognize the value of a record of the labor cost of certain operations — a valuable bit of information whether to change to machinery for those operations.

The ultimate goal is to increase net farm income. It can be done, as in the instance above, by analysis of records which show where and how to reduce cost of operation. Net income can also be increased by boosting crop yields and gross income. Compare present costs against present yields; add the prospective increase and cost of obtaining it, and there will be the basis for deciding whether to adopt any yield-increasing practice.

Decisions Vary in Occurrence

Most decisions like these are made only once a year. There are other decisions which must be made at frequent or irregular intervals. Properly kept records can give a continuing picture of the farm operation and information for such decisions.

The fundamental financial records are only three: *1) Property list or inventory, usually annual;*

2) Record of cash receipts; 3) Record of cash expenses.

Additional records in common use include the following: *4) Cash record or cashbook.* This is the most important and most common of all records. In it are recorded all cash transactions, either expenses or receipts. In the sense that it is used in accounting, "cash" includes bank deposits and checks, since they represent money available on demand. A cash record, then contains transactions involving both bank accounts and pocket cash.

You can't see as much in a small town as in a city, but what you hear makes up the difference.—Frank Miles.

5) Journal, or record of non-cash transactions. These include trade or barter transactions, purchases made on credit and sales made for future payment.

6) Cash journal. This combines the cash record and the journal.

7) Ledger. A ledger is a book or group of books composed of separate accounts with people or things. Ledger accounts may include accounts on operations, expenses, crops or enterprises, and credit transactions with an individual or company which continue over a considerable period.

No full-time farmer can use so elementary a sytem as the cash record, if for no other reason than to keep the income tax collector happy.

Which System for You

The farm record book adds two additional records to the cash record, non-cash transactions and inventory of non-depreciating items. It provides space for recording accounts receivable as income and accounts payable as expense. Changes in the value of livestock, crops and feed held on the farm also may be important to farm income, and it is therefore important to have beginning and ending inventories on these items.

The cash journal system is well-suited to medium-size farms and is widely used. It is an elementary form of double entry bookkeeping which can be handled with a minimum of training, usually by a member of the family. Principal feature of this system is the introduction of several debit-and-credit accounts.

Forms used will consist of a large page or double page with a date column, explanation space and 16 to 20 additional columns. Many types may be obtained from stationery and office-supply stores. Several pairs of columns will be used for basic accounts, and the remainder for additional distribution of expenses or enterprise accounts. In any account, debits are what goes out, credits

are what comes in.

Here, as in other types of records, two columns can be used as the initial record of cash expenses and receipts. Totals of the two columns, plus the amount of money on hand (cash or bank deposits) should be equal.

The personal account, farm account and capital account are the basic expense items used in most systems. In the personal account, the credits are any money received from personal income sources (securities, trusts and other non-farm revenue); personal expenses will be listed in the debit column.

Addition of the three basic accounts just mentioned to the cash journal system permits not only an appraisal of the financial situation at any time but also can be balanced for proof of accuracy. Your capital includes not only the value of the fixed investment in all productive facilities, but also a certain amount of cash used to meet operating expenses. This is operating capital. Transactions recorded in the expense and receipt columns are, in effect, transactions involving the use of operating capital.

Next comes the double entry bookkeeping sytem.

In the double entry system, the nature and amount of the transaction are recorded first in the cashbook and journal and again on the account ledger page. This procedure makes it possible to segregate income and expense much more thoroughly than in the cash journal system, and to add accounts for individuals or firms. Use of additional ledger accounts makes possible a systematic handling of credit transactions and inventories. And as a third advantage, double entry bookkeeping assures and proves the accuracy of the financial record.

Since 1920, farmers have learned to produce beef with 13 per cent less feed. It now takes 12 per cent less feed to produce a market-weight hog —225 to 250 pounds—than in 1920.

The enterprise accounting system is, in all respects, like the double entry system, except that profit and loss accounts for each crop or livestock enterprise are added.

New "Banking" System

A new system inovated by Farmer's Digest "lets your bank keep your books." It consists of a special bank deposit book and a yearly summary or account book.

To use this system, deposit all your farm income in the bank, using the new deposit book to record where the funds came from and what they paid for. Pay all bills and expenses by

check, noting on the stub or check what you are paying. (Cancelled checks, for tax purposes, are considered bonafide evidence of expenditures. Check stubs are not.) So far as possible, try to avoid easy-to-forget cash purchases by setting up accounts with your favorite dealers, who will bill you once a month.

By this method, you make positive, undisputable records as you go along. At any convenient time, you sit down with your bank deposit book and check stubs and bring your account book up to date.

The bank deposit book provides ample space to jot down a complete description of all farm income when bank deposits are made. It also helps keep track of all cash you put in your pocket and provides a handy form for jotting down what you did with it. Farm expenses and purchases paid for with cash are the most easily forgotten and lost as tax deductions.

The account book is a complete and comprehensive book to be used at the end of the year. From the special bank deposit book, you list farm sales made during the year on forms that give totals for your income tax forms. From cancelled checks and the cash spent section of the deposit book, you list farm expenses on still other forms. From these summary forms, simple instructions help you carry pertinent figures to other forms which figure depreciation, your social security payments, inventories, etc. From these forms, figures go to a tax return form so that you end up with a completed cash-basis figure for determining your tax.

Now back to the question: What kind of a system should you use on your farm? That depends on what kind of information you want the system to supply. It will be apparent from the discussion of types of systems that the kind and size of your farm is a determining factor.

Operation of a system of records and accounts involves three steps. First, the original information is collected from primary sources — bills, checks, field reports, time slips, etc. Second, the information is distributed and arranged in various ways. Third, specific items of information you need in the operation of your farm are obtained from recorded data.

This third step is crucial; it's the payoff! And it's not a simple procedure.

There are many ways to use an accounting system. The major ones may be classified under five headings.

1. Extracting individual items or getting quick totals of certain items for income tax or other purposes.

2. Determining accurately and completely the net farm earnings and net worth.

3. As a source of information for periodic decisions on various phases of farm operation and general management. This may be simply a reference use, or it may involve summarizing, comparing or analyzing information contained in the accounts and records.

4. As a replacement for personal observation. This is supervisory use, where the farm manager is unable to determine otherwise whether certain operations are being carried on in the way he wants.

5. As a source of questions requiring managerial decisions or supervisory action. The accounting system will be useful in this way to the extent that the information provided was not already available or was unknown in a general way.

Benefit Is Up To You

Your accounting system will require close and understanding study to obtain the information you want. The story is in figures, which require effort to translate into terms of farm activities. Moreover, the accounting system does not provide the means of taking action to increase net income. It may indicate what action is needed, such as additional land or capital or changes in the farming operation, but it is up to you to obtain the resources or make the changes.

The accounting system is a device, a source of information. It takes you only so far in increasing profits; and from there on, brother, you're on your own.

Quality is Easier with Bulk Handling

"The quality of milk is usually measured in terms of its bacteria count. There are many tests used to find the bacterial content of the milk. The lower the bacteria count of the milk, presumably the better the quality of the milk. But, there are many other factors to consider.

"One of these factors—proper cooling—is where bulk handling of milk makes quality easier. In the handling of milk with the bulk tank system we get good cooling. The milk is usually cooled from 90 degrees to under 40 degrees within two hours after milking.

"This cooling only protects the quality of the milk. If the quality of milk going into the bulk tank is poor, it will still be poor when it comes out. We just can't fool ourselves and rely completely on good cooling to get high-quality milk. We must have the high quality in the original milk."

—Dairy Specialist M. P. Dean at Wisconsin's Farm & Home Week

The Soil: Use it, Build it, Maintain it

Soil building is the foundation of a successful agriculture. High yields and low production costs are possible only when soils are fertile . . .

Condensed from Southern Farmer

Dr. H. L. Dunton, Head of Agronomy Dept., Virginia Polytechnic Institute

YOU ARE a farmer. Like your neighbors, you know that the soil is agriculture's manufacturing plant. And, like your neighbors, you know you must use it, build it, and maintain it, not only for immediate benefits—money in your pocket—but for your sons and daughters.

The use to which you put the soil and the management that you give it determine not only the quantity and quality of the crop grown, but the dollars and cents you make from the land. Countries that fail to use and manage their soils properly experience low yields and small return. Hunger, disease and other disastrous results follow.

Fortunately, we in this country have recognized this important fact and have taken steps to use, to build, and to maintain our basic heritage—the soil.

Soils Do Differ

There are many different kinds of soils—deep and well-drained soils; shallow, sandy land, plastic or pipe clays; poorly drained soils of low fertility and numerous others that could be mentioned. These soils are different "manufacturing plants." They should produce different crops and be maintained and managed differently.

Soils have different capabilities to produce. This means one soil may be better adapted to produce corn than another soil. One soil may be capable of growing 100 bushels of corn per acre, while another only 50, regardless of the type of management given.

Every farmer needs to know the kind of soil he has and something about its fertility, crop producing power, erodability, droughtiness and various other characteristics. Insofar as possible, use the soils you have to grow the crops for which they are best adapted. This is the first step in good soil management.

The management of an indust-

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rial plant determines not only how long it will last but the amount of the product produced, its quality, and the profit from the operation. Likewise, the soil must be correctly managed if the highest yield and quality with the most profit per acre are secured. The soil itself and the crop being grown are most important factors in working out a sound management program.

Here are a few suggestions to consider in working out a land-use and management program to build and maintain the soil on your farm:

1. *Walk over your farm and* determine the land-use for each field, whether it be forestry, pasture, or row crops. Some soils are adapted to all three uses, while others are best adapted to only one. In general, select the best soils on the farm for the necessary acreage of row crops such as corn, tobacco, peanuts, etc. Soils not adapted to row crops are generally used for pasture and hay insofar as needed. Soils not needed or adapted to row crops or pasture are generally suitable for forestry. Remember—no system of management can produce corn efficiently on soil only adapted to pasture or forestry!

2. *Select a crop that is adapt*able to the soil you have. Example, on shallow or droughty soils select crops that make most of their growth in the cooler spring and fall months such as small grains, or else select crops that are resistant to hot and dry periods in the summer. Corn is *not* well-adapted to such soils.

Alfalfa should be placed on the well-drained soils while crops such as Ladino clover may be put on less well drained soils.

Sandy soils are used more for early vegetables because they warm up quicker.

By properly selecting the crop, you not only receive better yields and secure greater returns per acre but you get, at no extra cost, better protection from erosion and leaching. More organic matter is also added.

"Are varieties adapted to different soil conditions?" Yes, that's the goal of the plant breeder and he's doing it. For many years, we have varied our tobacco varieties on the sandy and heavy or clay soils. This trend is "carrying over" into other crops as corn, grasses and legumes, and will be more and more important as these newer varieties are developed. Watch for them.

3. *The proper use of lime is* essential to help build and maintain productive soils. It is the "oil" that keeps this soil manufacturing plant "humming." Care should be exercised to use the right amount for the soil and the crop you are growing. Soils do vary in the amount of lime required to produce the same crop

and, of course, different crops require different pH levels in the soil.

To determine the proper amount of lime to apply, consider the soil you have, the crop to be grown, and the results of a soil test. This is the best basis to use in determining the lime needs. Thousands of acres are in need of lime in order to grow crops most efficiently. However, there are also many acres that have been limed sufficiently to produce most economically.

4. *The lack of sufficient* amounts of the right kind of plant food or fertilizer lowers yields, depletes the soil, cuts profits, and is one of the basic causes of soil erosion. Most soils in the East and Southern United States are, by nature, low in plant food. Plant food is one of the raw materials used by the manufacturing plant (the soil) in order to turn out the finished product (the crop). Apply it wisely.

It is not sufficient to use just fertilizer, we must use the right kind and amount of fertilizer for the soil and the crop. We cannot determine the *exact* kind and amount of fertilizer to use, but we must approach this as close as possible and in order to do so consider these facts:

(a) The soil itself—soils do differ. Some soils require more plant food to yield the same amount of crop than other soils. The sandier, lighter soils require more plant food than the heavier soils.

(b) The past treatment of the soil is important. Has it been well-limed and fertilized? Has a rotation been followed? Has organic matter been returned? Has the loss of soil through erosion been controlled? In other words, is the soil in a "high state" of production or is it "run-down?"

(c) The previous crop grown is very important. Was it a legume or was it a grass? Was a good growth or a poor growth turned under? Was the yield heavy or light? Was it a dry year or a wet year? These factors influence the fertilization of the crop to be grown.

(d) A soil test can help you determine the kind and amount of fertilizer, but it should not be the only consideration. A soil test is very helpful provided you (the farmer) have taken the sample carefully and it represents the field, and provided the test is properly interpreted. You should use soil tests, but use them properly.

(e) The crop you are planning to grow influences the kind and amount of fertilizer to use. Recently, I visited a farm that had six different analyses or grades of fertilizer for the crops that year. This farmer had considered carefully the analysis and the amount of fertilizer to use on

every field for every crop, and I think had done an excellent job. He fitted the fertilizer to the soil and crop needs to return the most profit. The "day" of one analysis for all crops on the farm is gone.

Almost every farmer uses some fertilizer. But, do you use enough of the right kind? Long time experiments at VPI show that the right kind and amount of fertilizer increased the yield of corn from 45 to 105 bushels per acre compared to not enough of an unbalanced fertilizer. Wheat and hay showed even greater percentage responses from proper fertilization. Experiments at other locations and experiences of many farmers tell the same story.

Plant food properly used is profitable and at the same time helps to build and maintain our soils for permanent use.

5. *Use a rotation of crops that* supplies the needs of your farm. A 40-year experiment at VPI comparing a 4-year rotation of corn, small grain and 2 years hay with the same crops grown continuously has recently been completed. The crops grown in rotation produced twice the feed. The soil in the rotation plots was soft, spongy, absorptive and "full of life." The continuous crop soil was the opposite with a "dull and dead" feel.

There is a rotation to fit every situation ranging in length from one year as a bright tobacco rotation with rye as a winter cover crop each year, or as silage corn and a winter cover crop each year to an 8 or a 10-year rotation such as corn, small grain, and 5 or more years of alfalfa. A good rotation should produce the crop, or crops, you want and need, give protection to your soil, add organic matter, and help hold down diseases and insects. A good rotation is essential in any good soil management program.

6. *Use the soil conserving practices* that will help you use, build, and maintain a productive and profitable soil for today and tomorrow. Strip cropping, terracing, grassed waterways, diversion ditches, and similar practices are essential in building and holding the soils. Select conservation practices for each field.

7. *Good seed bed preparation*—proper seeding and cultural practices help build the soil, since it helps insure stands and good growth of the crop. This in turn gives more cover, adds additional organic matter, with the increased root growth improving the physical condition of the soil. Even with row crops as corn, a good stand and growth not only gives better protection to the soil but the increased root growth benefits the soil.

FARM BOOK REVIEWS

Feedstuffs

By Dr. Rudolph Seiden and Dr. W. H. Pfander. Published by Springer Publishing Company, 44 East 23rd St., New York 10, New York. 600 pages. $8.00.

The first encyclopedia compilation of facts and figures dealing with feed stuffs. For farmers, feed suppliers, agricultural students. Amazingly complete and accurate coverage of animal feeding, production of forages, feed stuffs, etc.

Arranged in two column pages, dictionary style. Any specific fact is fast and easy to find. Related material is called to your attention by cross references.

Grant C. Cannon, Managing Editor of Farm Quarterly says, "an honest book, carefully done, that fills a need felt by farmers and the rest of us in agriculture."

Professor Pfander, Professor of Animal Husbandry at the University of Missouri, contributed articles and tables dealing with rations. Dr. Seiden's special field has been veterinary pharmaceuticals. The result is complete information on medicated feeds and related factors.

In nutrition, the economics of feeding are considered plus how to balance diet for all species, for all age groups, for all purposes and for highest profit. Descriptive articles are illustrated.

Also covers pasture and range crops, processed feeds, minerals, etc. A big and comprehensive book indeed.

Audubon Western Bird Guide

By Richard H. Pough. Illustrated by Don Eckelberry. Published by Doubleday & Company, 575 Madison Ave., New York 22. $4.95.

Few of us realize that several million people in the U. S., including a great many farmers, find real pleasure in their chosen hobby of bird watching. This book and its companion volume are ideal for bird identification as well as for reference for the farm family interested in wild life.

With the publication of this volume, Richard H. Pough completes his series on the birds of America. Companion volumes are AUDUBON BIRD GUIDE (Small land birds of Eastern and Central North America from Southern Texas to Central Greenland) and AUDUBON WATER BIRD GUIDE (Water, game and large birds of Eastern and Central North America from Southern Texas to Central Greenland). Both of these books are priced at $3.95 and are also available in a single volume entitled AUDUBON GUIDES (All the birds of Eastern and Central North America), priced at $5.95.

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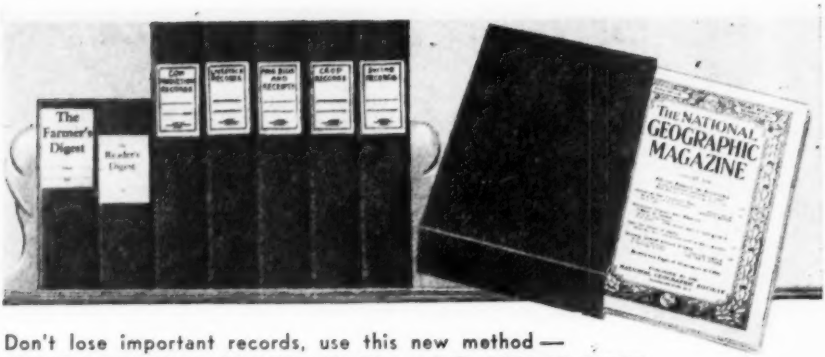

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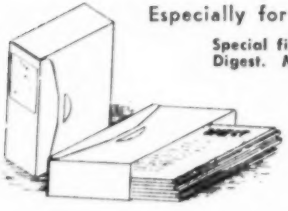

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